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ULTRAVIOLET RAY THERAPY IN PERITONEAL AND GLANDULAR TUBERCULOSIS OF CHILDREN *

HENRY J. GERSTENBERGER, M.D.
AND
SPENCER A. WAHL, M.D.
CLEVELAND

In the United States, the literature is barren as to the value of the ultraviolet rays in the treatment of peritoneal and glandular tuberculosis of children, even though various authors, such as Selma Meyer,[1] in 1918, and R. Hamburger,[2] in 1920, from Czerny's clinic, have reported very favorably on its use in tuberculosis of the peritoneum and of the glands. Recently Finkelstein,[3] and Rohr,[4] Birk [5] and Kleinschmidt [6] have made similar reports, although Birk is inclined to prefer the roentgen ray in many instances.

Since the fall of 1921, we have been interested in carrying out this treatment in the various forms of tuberculosis that have come to our limited service. Ten cases have been observed since then, and the observations made on them form the basis of this report. All our patients were exposed to one of the same sources of light, namely, a quartz mercury vapor arc lamp of the type of the so-called Alpine lamp, whose spectrum contains rays varying in length from 380 to 150 millimicrons. The rays with wave lengths below 280 millimicrons are decidedly more irritating to the skin than those between 280 and 380 millimicrons. It is possible to exclude the former by the use of films without lessening the therapeutic effect of the lamp. Such a film was used in Case 3 for a short period. All patients but one were in the hospital ward and were not exposed to sunlight. Two of the hospital patients, however, as the records will show, were subjected for from two to five minutes before exposure to the ultraviolet rays to a 1,000 watt mazda heating lamp of the type of the Burdick deep therapy lamp. The idea of this preliminary exposure was to dilate the peripheral vessels and in this manner to enhance the effect of the ultraviolet rays.

The one patient who was not in the hospital (Case 4) was a darkly pigmented colored girl, who lived under very poor hygienic surroundings. Her improvement under ambulatory ultraviolet therapy emphasizes the relative insignificance of the rôle played in the improvement of our other patients by hospital diet and confinement. It is therefore our opinion that whatever therapeutic results have been obtained in our cases are solely due to the effect of the ultraviolet rays.

How this effect is produced by these rays and whether, when a tuberculous person is exposed for treatment to sunlight, the beneficial effect is due solely or mainly to the action of the ultraviolet rays, is a different and difficult question to answer and one that seems to get more complicated as additional data are discovered.

Charcot [7] was the first to assert that the ultraviolet rays are responsible for the development of the erythema and pigmentation rather than the heat rays, and Widmark [7] was the first to use experimental methods to solve this question. He used a 1,200 candle power electric arc light, and, on the one hand, caused no pigmentation when the majority of the ultraviolet rays were filtered out by window glass, while, on the other hand, he brought pigmentation about when the heat rays were eliminated by being passed through a layer of water.

The names of Finsen [8] and Rollier,[8] principally, are associated with the use of the ultraviolet ray in the treatment of tuberculosis. The former used an artificial source of light, namely, the electric carbon arc, while the latter's results were obtained by the exposure of his patients to the mountain sun. Both were of the opinion that the ultraviolet or chemical rays were directly or indirectly responsible for the improvement obtained. Finsen treated mainly cutaneous tuberculosis, while Rollier's patients were suffering principally from tuberculosis of the bones and glands. Since these rays can penetrate the skin only to a depth of from 0.5 to 1 mm., the principal effect of these rays must be indirect, except in the case of cutaneous tuberculosis, especially when the parts are put under pressure, as occurs when the Kromayer lamp is used. This conclusion corresponds with our own experience, according to which the deep seated mesenteric glands showed the most prompt and most marked improvement.

Such an indirect effect of the ultraviolet rays has been demonstrated satisfactorily in rickets by Huldschinsky,[9] who, by exposing one extremity to these rays was able to produce a change to normality in rachitic bones of the upper extremity. Likewise, Jesionek [10] cured a case of lupus by exposing the entire body to these rays, except the area at which the lupus was located. Rollier has

* Read before the Section on Diseases of Children at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

* From the Babies' Dispensary and Hospital, and from the Departments of Pediatrics at Lakeside Hospital and the Western Reserve University School of Medicine.

1. Meyer, Selma: Jahrb. f. Kinderh. **87**: 126, 1918.
2. Hamburger, R.: Deutsch. med. Wchnschr. **46**: 147 (Feb. 5) 1920.
3. Finkelstein, H.: Die Behandlung der tuberkulosen Bauchfellerkrankungen im Kindesalter, Berlin, 1922.
4. Rohr, F.: Kinderheilkunde, und Bestrahlung mit Quarzlampe, Berlin, Kabitzsch, 1921.
5. Birk, W., and Schall, L.: Strahlenbehandlung bei Kinderkrankheiten, Berlin, Urban & Schwarzenberg, 1924.
6. Kleinschmidt, Hans: Tuberkulose der Kinder, Leipzig, Barth, 1923.
7. Cited by Kisch (Footnote 12).
8. Cited by Bach, Hugo: Bestrahlung mit Quarzlampe, Berlin, Kabitzsch, 1921.
9. Huldschinsky, K.: Heilung von Rachitis durch künstliche Hohensonne, Deutsch. med. Wchnschr. **45**: 712, 1919.
10. Jesionek, A.: Zur Lichtbehandlung des Lupus, Deutsch. med. Wchnschr., 1914, No. 18; Die Sonnenlichtbehandlung des Lupus, Strahlentherapie **11**: 321, 1920.

suggested that, in addition, a direct effect of the rays may occur through an intermediary action of the pigment which is developed in the skin of most persons who are exposed to the sun or to the artificially produced actinic rays. It is his idea that these rays are transformed by the pigment into longer rays and so have the power to penetrate to deeper levels.

Recently, Balderrey [11] has shown by the use of the photographic plate that the penetrating power of visible light and of its component parts is greater in tanned brunettes than in untanned blondes.

There have been, however, opponents to both the idea that pigmentation is due to the action of the ultraviolet rays and that the beneficial effect of sunlight is likewise due to their presence. Kisch,[12] especially, has been vigorous in the denunciation of the credit given to the ultraviolet rays in both respects, and has maintained that the beneficial effects obtained with sunlight in tuberculosis were principally due to its content of heat rays. Without question, he has shown that: (1) pigmentation can be produced by exposing the skin to intensive light and heat rays, minus the ultraviolet component; (2) the pigment produced in this manner is more of the chocolate brown of the negro, while that produced by the ultraviolet ray lamp is a reddish brown hue; and (3) bone tuberculosis can be improved by exposure to an intense source of light that contains no ultraviolet ray, such as he produced with his acetylene-oxygen mirror-reflected light.

Sonne [13] likewise questions whether there is justification in admitting that the benefit derived from exposure to sunshine is solely due to the action of the ultraviolet ray. He reminds us "that the therapeutically active sources of light (especially the sun, the carbon arc lamp and the quartz mercury lamp) possess, besides that they all emit many ultraviolet rays, that characteristic in common that they are the best known sources of light that emit the most intense light," and further, "that many years ago, Rubner showed that the luminous rays, on being radiated to the skin, are perceived otherwise than are other heat rays." And Sonne [14] himself has found that during infra-red radiation, the temperature of the subcutaneous tissue falls gradually from the surface temperature of 45.5 C. (114 F.) to the stable tissue temperature of 37 C. (98.6 F.) at about the depth of 1 cm., while, on exposure to luminous rays, a rise of the surface temperature of 43.8 C. (111 F.) occurs to a maximum of 47.5 C. (117.5 F.) at a depth of about 0.5 cm., at which level the infra-red radiation temperature was obtained at 41.7 C. (107.6 F.), or at 5.8 degrees C. lower.

In other words, the luminous rays penetrate tissue better than the longer infra-red rays, and Sonne,[15] therefore, suggests that "the curative effect of the universal light bath is due to the capacity of luminous rays, during the light bath, to heat a very essential portion of the aggrepate blood volume of the organism to a temperature possibly exceeding the highest ever measured fever temperature without causing the body temperature to rise in any appreciable degree."

The incompleteness of our present knowledge regarding the powers and functions of the component parts of sunlight and of sunlight as a whole is further evident from a recent report by Balderrey,[11] in which some of his conclusions are as follows:

1. Sunlight will penetrate the human body, to a depth of 10 inches.
2. Pigmentation is not merely a protective measure against the caustic action of the highly chemical short wave-length rays of the spectrum, but is also an important factor in varying the penetration of light, inasmuch as it changes the white reflecting surface to a dark light-absorbing one.
3. Pigmentation is produced by wave lengths shorter than 480 millimicrons, increasing as wave lengths become shorter and more refrangible.
4. Severe acne responds to treatment with blue light, wave lengths 360 to 500, when other measures have failed to effect a cure. This part of the spectrum is also of great value in bleaching and smoothing vivid and disfiguring scars.

He also found that guinea-pigs died, in each instance, on exposure to sunlight through a green glass filter, after an interval of one and one-half hours, while rabbits succumbed first under the amber filter, then under the red, and were still alive at the end of three hours under the green filter. So it may be possible that even in tuberculosis other rays play a greater rôle in its cure by sunlight than do the ultraviolet rays, although this is unlikely.

Schedule of Exposures

	Days Alternate One-Half Anterior Surface		Type General One-Half Posterior Surface
	White Children	Colored Children	Total Exposures—12
First month:			
	At 80 cm.	75 cm.	for 5, 7, 9, 11 minutes
	At 75 cm.	70 cm.	for 7, 9, 11, 13 minutes
	At 70 cm.	65 cm.	for 9, 11, 13, 15 minutes
Second month:			Total Exposures—12
	At 70 cm.	65 cm.	for 15, 17, 19, 20 minutes
	At 65 cm.	60 cm.	for 15, 17, 19, 20 minutes
	At 60 cm.	60 cm.	for 15, 17, 19, 20 minutes (*Caution*)
Third month:	Total Exposures—12 At 60 cm. for 20 minutes—if well tolerated; otherwise, at 70 cm.		
Fourth month:	No treatment.		
Fifth month:	If necessary, like the first month.		

REPORT OF CASES

CASE 1.—*Tuberculosis of lymph glands (cervical, mediastinal). History.*—E. B., a colored boy, aged 18 months, admitted to the hospital, Oct. 21, 1921, had been sickly for from three to four months. The mother had nursed the infant until it was 12 months of age, when she died of pulmonary tuberculosis. Five days after the death of the mother, a brother of the patient had died of the same disease. After 12 months of age, the baby was given a general diet of milk, farina, vegetables and fruit; he had always been in excellent health until four months previous to entrance, when he began to lose considerable weight, and a brassy, paroxysmal cough, particularly at night, with expectoration of mucus, occurred. Probably there was fever with these symptoms, even though it was not noticed until a week previous to hospitalization. During the last two months before admission, there occurred swollen glands of the neck.

Physical Examination.—The patient was a poorly nourished child, very sick looking, tired and drowsy, lying by choice on the left side, with an irregular respiration rate of 40 a minute; paroxysms of cough occurred often with some expulsion of mucus. On the right side of the neck was present a mass of lymph glands, which were moderately firm and matted together. The size of this mass was approximately 4 by 5 cm. On the left side, a similar mass was present, measuring 3 by 4 cm. One submental lymph gland was palpable, enlarged and approximately 1 cm. long. The epitrochlears were both palpable. The axillaries were palpable but not especially enlarged. The inguinals were palpable and small. In the lungs no areas of consolidation were found, although a positive d'Espine's sign was present and the roentgen ray showed a decidedly widened and dense medias-

11. Balderrey, F. C., and Ewald, E.: Light Energy and Therapeutics, Am. Rev. Tubere. 8: 501 (Feb.) 1924.
12. Kisch, Eugen: Diagnostik und Therapie der Knochen und Gelenktuberkulose, mit besonderer Berücksichtigung der Theorie und Praxis der Sonnenbehandlung, 1921.
13. Sonne, Carl: Acta med. Scandinav. 54: 336, 1920-1921.
14. Sonne, Carl: Acta med. Scandinav. 54: 374, 1920-1921.
15. Sonne, Carl: Acta med. Scandinav. 54: 384, 1920-1921.

tinum due to enlarged bronchial glands. The abdomen was prominent, but neither masses nor fluid were found to be present. The sputum was negative on one examination for tubercle bacilli. The intracutaneous tuberculin test (O. T., 1:1,000) was positive.

Treatment and Course.—The diet consisted of whole milk, farina, vegetables and fruit. During the first four weeks of the ultraviolet ray exposures, the uviol film was interposed and the average distance from the quartz lamp was 20 cm., and the time increased from five minutes to thirty minutes. At the fifth week, the ultraviolet exposures were given without the uviol film, beginning at 80 cm. for seven minutes. In six weeks, the cervical glands had decreased in size; the paroxysms of cough became less in number, and the temperature was normal. In fourteen weeks, when the exposure was 60 cm. for ten minutes, the right cervical glands had become distinctly smaller. In twenty weeks, with the exposure at 65 cm. for twenty minutes, the paroxysmal cough had entirely disappeared, and marked general improvement was noted. The exposures were made on alternate days.

Therapeutic Results.—These were good. After twenty-six weeks of ultraviolet therapy, the child's weight had increased from 7,100 to 11,200 gm.; the constitutional symptoms of the disease were absent; the cough had entirely disappeared even though the roentgenogram of the mediastinum showed no improvement, a fact that does not exclude, in our opinion, decided improvement in the bronchial gland group; the cervical glands had all distinctly decreased in size.

CASE 2.—*Tuberculosis of the lymph glands (cervical, mediastinal, mesenteric, inguinal); gangrene of feet and toes. History.*—L. S., a colored boy, aged 2½ years, admitted to the hospital, June 10, 1922, whose aunt had died of tuberculosis and whose 20-year-old brother had been operated on one year previously for tuberculosis of the cervical glands, had a moderate attack of pertussis in March, 1922, during the latter part of which he did not play as intently as formerly and tired easily; there was fever, particularly at 4 p. m. daily, and he began to show considerable loss in weight. One month later, pain developed in the midabdominal region, and an umbilical hernia began to enlarge simultaneously with the swelling of the abdomen. The stools were normal. In late April, the front part of both feet, including the toes, were swollen at night, but were normal in appearance again in the morning. In the middle of May, 1922, there was pain in these swollen parts, such that the child became confined to bed. As the swelling subsided, blue spots appeared, which, in June, 1922, had become gangrenous, when the patient was admitted to the Babies' Dispensary for diagnosis.

Physical Examination.—The patient was a somewhat undernourished and underdeveloped boy, not acutely ill. The anterior cervical lymph glands were enlarged on both sides, while the posterior cervical glands were palpable on the right. They were slightly enlarged and firm. One in the left anterior chain was as large as a hickory nut. A roentgenogram of the chest showed a dense wide mediastinum. The abdomen was distended symmetrically, and through the 3 by 8 cm. opening of the umbilical hernia could be palpated an intra-abdominal mass about the size of an orange, with a texture of numerous lymph glands matted together. This was surrounded by numerous discrete neighboring lymph glands. There was marked enlargement of one of the right inguinal lymph glands, while the other right inguinal glands, as well as those of the left side, were palpably enlarged.

The excursion of the femoral vessels compared to the carotids was suggestively diminished, while neither of the dorsalis pedis pulses was palpable. The gangrenous areas of the feet were thus distributed: anteriorly and posteriorly, the two small right toes, and at the junction of the great and second toe of the left foot; and also on two bilaterally symmetrical positions on the posterior surface of each foot just below the great and the little toes. The tuberculin test (O. T., 1:1,000) was positive; the blood Wassermann test was negative. A caseous portion of the right inguinal gland, on injection into a guinea-pig, produced miliary tuberculosis.

Treatment and Course.—The diet consisted of whole milk, farina, zwieback, vegetables and fruit. The ultraviolet treatments, given on alternate days, were preceded by five minutes at 30 cm. exposure to the heat lamp, in order to dilate the peripheral capillaries. The distance of the quartz lamp was, in the beginning, 75 cm. for five minutes, and, in six weeks, 70 cm. for thirteen minutes. At this time the gangrenous slough had dried, and ulcers remained on the feet. After seven weeks, the mesenteric glands were distinctly smaller. In eight weeks, there was definite healing of the ulcers. By fourteen weeks, the intra-abdominal glands had become very much smaller, and the umbilical hernia was much reduced in size. The distance was 50 cm. for nine minutes at this time.

Therapeutic Results.—These were excellent. Following seven weeks of ultraviolet therapy, the mesenteric glands had become distinctly smaller, and, after fourteen weeks, the abdominal mass had entirely disappeared. The gangrenous slough occurred in two and one-half weeks following the exposures, and the subsequent ulcers of the feet healed over completely after fourteen weeks of therapy. The weight increased markedly from 9,800 to 12,700 gm. in six months, indicative of the marked general improvement, which occurred progressively and markedly.

At fourteen weeks, the roentgenogram of the chest showed the mediastinum significantly less wide and dense; the ulcers of the feet had progressively healed; the glands of the abdomen had disappeared to palpation; the weight had approached normality; the change in disposition and the general improvement were decidedly in evidence. After six months of ultraviolet therapy, when the distance was 45 cm., for five minutes, the abnormalities had changed to such an extent that the slight enlargement of the cervical, axillary and inguinal lymph glands was the only abnormality on physical examination.

CASE 3.—*Peritoneal tuberculosis. History.*—H. K., a girl, aged 5 years, entered the hospital, Oct. 2, 1921, with the complaint of fever and irritability. She had been severely ill at home for seven weeks and had been treated for pyelitis, colitis and a possible typhoid fever. The illness was initiated in the latter part of August, 1921, with fever and malaise, some vomiting, and three days later with diarrhea so marked that, on the average, twelve watery, green, choppy stools occurred daily. The temperature had been extremely irregular, going as high as 106 F. The abdomen was slightly distended and caused some discomfort.

Since the fever and the general condition remained uninfluenced by treatment, the patient was brought to the hospital for diagnosis. According to the history, the onset was acute and accompanied by fever and diarrhea. It seemed probable to us, on the basis of the history, that an infectious colitis had been present, even though no blood had been noticed in the stool, since the urine showed the presence of pus cells (and colitis is a common precursor of pyelitis in girls).

The patient, therefore, was treated on this basis, and when a distinct improvement was not readily obtained, it was then assumed that a tuberculous peritonitis might be the explanation of the continuance of the fever and allied symptoms. This assumption was rendered more probable by the presence of mild abdominal distention and discomfort, and by the finding of a small amount of free fluid in the abdomen.

Physical Examination.—The patient was a well developed and still quite well nourished girl, somewhat pale and listless, with a tired expression, irritable and presenting the picture of an acute illness. The pulse was 144, respiration, 24. The general examination was negative, except for the abdomen, which showed the findings mentioned above. The liver was not enlarged, and the spleen was not palpable.

The intracutaneous tuberculin test (O. T., 1:1,000) was positive. The Widal test (typhoid; paratyphoid A and B) was negative. The blood culture was negative. The roentgenogram of the chest was essentially negative. The urine showed a slight trace of albumin and a few scattered white blood cells. At the end of the second week, a shifting dulness and a fluid wave were demonstrable.

Treatment and Course.—The diet at first consisted of Keller's malt soup; later, additions were made till the 5 year diet was complete. Two and one-half weeks after admission, the ultraviolet therapy was instituted. From October 18 to November 30, the uviol film was interposed during the exposure, beginning with a distance of 55 cm. for ten minutes and ending with a distance of 20 cm. for twenty-three minutes.

During the third week, very short exposures without the film were given in addition, beginning with 80 cm. distances and two minute durations. Later, when the uviol film was not used, an erythema occasionally was produced by exposures anteriorly, posteriorly and laterally at 80 cm. for five minutes, in the beginning, and for eleven minutes, at the end. From Dec. 2, 1921, to Feb. 24, 1922, the ultraviolet ray treatments were given without the film, increasing from 70 cm. for thirteen minutes to 60 cm. for twenty minutes.

After two and one-half weeks of the ultraviolet therapy, the temperature dropped to normal and the irritability had been replaced by a cheerful disposition. In five weeks, when the lamp was at 75 cm. for eleven minutes, the abdominal distention had disappeared and no signs of free fluid were elicited.

Therapeutic Results.—This patient had an illness which was uninfluenced for a period of nine and one-half weeks, but after two and one-half weeks of ultraviolet therapy, the temperature began to drop, and the child looked and felt better. In five weeks, the signs of peritonitis had disappeared and the disposition and activity of the child had markedly improved. After ten weeks of therapy, the temperature had reached normal, and the weight had increased from 46 pounds (20.8 kg.) to 54 pounds (24.5 kg.).

CASE 4.—*Tuberculous peritonitis. History.*—L. W., a colored girl, aged 6 years, was admitted to the Babies' Dispensary, March 20, 1922, with the complaint of "large abdomen." The child's mother, father, one aunt and one grandmother had previously died of pulmonary tuberculosis. The abdomen had enlarged during the previous week. Previously, the patient had been subject to frequent colds with cough, and had had pneumonia in the winter of 1921-1922.

Physical Examination.—The patient was quite well developed, but emaciated. There were no special superficial glandular enlargements and no demonstrable gross lesion in the lungs. The abdomen was markedly distended and tense with fluid and gas; the diaphragm was pushed up; the breathing was rapid but without much discomfort. The spleen and liver were not palpable. The intracutaneous tuberculin (O. T., 1:1,000) was very positive. The temperature was 37.6 C. (99.6 F.).

Treatment and Course.—Hospital care was refused; therefore, the usual diet for 6 years of age was ordered given at home, and the patient came to the dispensary for the ultraviolet ray treatments at intervals of from one to two days. The initial exposure, April 12, 1922, was given for five minutes at 75 cm. In two weeks the recorded weight was 21.75 kg. and the temperature 36.5 C. (97.5 F.). The abdomen was smaller than at the first visit, and the appetite had improved. April 24, a large conglomerate mass was felt in the right abdomen, separated from the liver dulness, and was palpable, in all probability, as a result of the recession of the fluid. One quart of milk daily was donated, since it was learned that the family did not feel able to purchase the additional amount of milk. In five weeks, when the exposure was at 65 cm. for nineteen minutes, the weight had decreased to 19.8 kg., which could hardly be explained except as a result of the fluid loss. At this time, after a period of five weeks of ultraviolet therapy, no fluid was demonstrated, and the masses had entirely disappeared from the abdomen. Judging from the rapidity with which the tumor disappeared, one is inclined to believe that the masses were due to a fibro-adhesive exudate with intestines and possibly omentum matted together. In thirteen weeks, when the exposure was at 60 cm. for twenty minutes, the abdomen was normal; the temperature was 37.8 C. (100 F.), and the weight had increased to 20.8 kg. In five months, when the exposure was at 60 cm. for seven minutes, the weight was 22.5 kg.; and a general improvement was marked. A month's vacation was given, and then the treatment repeated as formerly.

Therapeutic Results.—These were excellent. There had been a tremendously rapid improvement outside the hospital through ultraviolet exposures at the dispensary. Aside from the ray treatment, and later addition of 1 quart of milk to the diet, the child led a normal life at home. There was no unusual rest or care, and we therefore felt justified in ascribing the improvement to the effect of the ultraviolet ray alone. The patient was seen in April, 1924, twenty-five months since her first visit to the dispensary, and her physical condition was found to be normal.

CASE 5.—*Tuberculous adenitis (cervical, mediastinal, axillary, inguinal). History.*—L. E., colored, aged 8 years, was admitted to the hospital, Feb. 8, 1924, because of enlarged glands. Three years before, the right side of the neck became swollen; subsequently, this swelling subsided and then again enlarged at intervals. Since eight months before admission to the hospital, the left side of the neck, likewise, had been swollen. The right side had always been larger than the left.

Physical Examination.—Development and nutrition were quite good. The cervical glands, both the anterior and posterior groups, were enlarged on the right and the left. The glands were discrete, firm and somewhat movable; those on the left were smaller than those on the right. The submental and the submaxillary lymph glands were distinctly enlarged. The right and especially the left axillary glands were enlarged, discrete and firm. The epitrochlears, inguinals and femorals were palpably enlarged, especially on the right. The roentgenogram of the chest showed cloudiness of both lungs and a wide mediastinum due to enlarged glands. The d'Espine sign was positive, and bronchial breathing extended to the seventh dorsal vertebra. The spleen was palpable. The blood examination was negative. The intracutaneous test (O. T., 1:1,000) was tremendously positive. Gross and microscopic section of an axillary lymph gland showed caseous tuberculosis, and the gland contents injected into Rabbit 1 produced a tuberculosis septicemia with miliary tuberculosis; Rabbit 2 survived; two guinea-pigs likewise injected were examined postmortem in six weeks and found to be normal.

Treatment.—The usual hospital 8 year diet was given. The ultraviolet ray treatments extended from February 13 to April 4, for a total of thirty-two exposures, the first eight given anteriorly, and the remainder on alternate days anteriorly and posteriorly, respectively, beginning with an initial dose at 75 cm. for five minutes and ending at 45 cm. for twenty minutes.

Therapeutic Results.—These were fair. In seven weeks, the temperature gradually dropped from 39 C. to about normal, with an occasional evening rise to 37.8 C. (100 F.). There was also a general improvement, with a gain of 1½ pounds (0.7 kg.) in weight. The glands seemed to be slightly decreased in size. The change, however, was so small that it could not be considered dependable. Unfortunately, after eight weeks of observation, the patient was transferred to a contagious hospital, owing to chickenpox in the ward.

It is our opinion that the effect of the ultraviolet ray was not as evident in this case as in some of the other cases, possibly because the glands were slowly winning the long battle by the development of fibrosis. Whether the type of the infection (bovine) plays a part in this is difficult to determine and is not known.

CASE 6.—*Tuberculous dactylitis; tuberculous adenitis. History.*—G. K., an infant, aged 20 months, whose father had active pulmonary tuberculosis, admitted to the hospital, April 2, 1923, had had swelling of the glands over the right shoulder and back of the left neck, at 8 months of age, for a period of six weeks. They were opened by a physician, and subsequently discharged pus for two months, at the end of which time the discharge ceased but the glands remained enlarged. For the past month, there had been swelling of some of the fingers and toes. There had been an occasional fever noticed and always irritability. The diet and weight have been normal.

Physical Examination.—Development and nutrition were good. The infant was irritable and pale. The right occipital lymph glands were much enlarged, confluent over a large area, with crusts over old discharging sinuses; the right suprascapular group had the same characteristics. The submental and the inguinal lymph glands were distinctly enlarged. The roentgenogram of the chest showed slight cloudiness of both upper lobes, although the usual measures of examination demonstrated no change. There was swelling of the proximal phalanx of the left thumb; of the left great toe; of the middle phalanx of the right fourth finger, and of the right first metatarsal. The swellings were firm, not red, tender or fluctuant. The roentgenogram showed dactylitis of the proximal

phalanges of the left thumb; left great toe; fifth right toe, and the first right metatarsal. The tuberculin test (O. T., 1:1,000) was positive. The blood Wassermann test was negative.

Treatment.—A diet of whole milk with 17 per cent. sucrose (Pirquet's dubo) and orange juice was given. The ultraviolet ray therapy was given daily alternately, anteriorly and posteriorly over a period of thirty-five days. The initial dose was at 80 cm. for five minutes, while the last one was at 70 cm. for twenty minutes. The patient was then discharged for the continuance of the same treatment at the dispensary, but proper cooperation was not obtained.

Therapeutic Results.—These were good. In seventeen days after the treatments, the temperature dropped from 38.5 C. (101.3 F.) to normal, and remained so except for a four day rise which accompanied an acute nasopharyngitis. In the first five days of hospital care, the weight dropped from 9,000 to 8,600 gm., but at the end of the thirty-five days it had increased to 9,150 gm. The swellings noted on the fingers and toes distinctly decreased in size after twelve days of treatment; very little swelling could be determined, and this only by palpation. The roentgenogram confirmed this finding by a narrowing of the previously enlarged bones. There was no demonstrable discharge from the glandular sinuses while in the hospital, and the glands remained about the same size with no demonstrable change in their characteristics.

CASE 7.—*Tuberculous adenitis; tuberculous osteitis. History.*—D. C., a colored boy, aged 7 years, admitted to the hospital, June 22, 1923, about eighteen months previous, began to vomit food and water, which condition persisted with remissions for four or five months. The eyes became inflamed, but there was no discharge or ulcer formation (scrofula?) and there was an abscess of the scalp, which was slow in healing. One year previous, the neck began to swell and then, in order, the left thumb, left elbow, left leg, right elbow and right leg; all the swollen areas had increased in size progressively. There had been fever most of the time, night sweats constantly, and considerable loss in weight. The patient had been in a convalescent hospital (bone tuberculosis largely) for the past year. The patient had had pertussis at 6 weeks of age, diphtheria at 2 years, and measles at 6 years.

Physical Examination.—The patient was chronically ill, underdeveloped and undernourished. The anterior cervical glands were enlarged and quite confluent bilaterally. One submental lymph gland was the size of a hen's egg, not tender, but fluctuant. The right epitrochlear gland was enlarged. The inguinal glands were bilaterally enlarged. The undulatory movement was diminished, the percussion note increased; the breath sounds were increased at the right apex. There were numerous scattered coarse, moist and a few crepitant râles heard over the lungs, not particularly confined to the right apex. The abdomen was distended; the spleen was just palpable, and the liver extended four fingers' breadths below the costal margin. The osseous portions of the extremities were involved as follows: discharging sinus from osteomyelitis of the second phalanx of the left thumb; both tibiae swollen at the middle third; the left elbow showed large fluctuant swelling about the joint with an extension deformity of 30 degrees. The tuberculin test (O. T., 1:1,000) was positive. The blood Wassermann test, as well as the provocative Wassermann test, was negative.

Treatment and Course.—The diet contained the foods allowed at 7 years of age. The ultraviolet ray exposures were begun at 80 cm. for five minutes and continued from one to two days apart for a period of five and one-half months. A vacation of one month was given, and then for four more months the same treatment repeated as before. Both anterior and posterior exposures were given throughout. Toward the end of each period, the distance and time were 45 cm. and twenty minutes, respectively. During the first period of treatment, the temperature became normal at intervals, and remained at a distinctly lower level than it was on entrance. At the end of ten months' therapy, the general condition improved; the weight increased from 40 pounds (18.1 kg.) to 43½ pounds (19.7 kg.); the lymph glands were smaller, but the osseous sinuses still discharged pus. A roentgenogram of the right tibia and right elbow showed deposit of new bone, and no further destruction of bone was noted.

Therapeutic Results.—These were fair. Whether or not the ultraviolet ray produced the little improvement is problematical. It is to be pointed out that the patient had been in a convalescent hospital for one year without any improvement; and it may well be stated that the addition of the ultraviolet ray to the usual supportive measures had a great deal to do with the general improvement of this patient.

CASE 8.—*Pulmonary tuberculosis; purulent otitis media; terminal generalized miliary tuberculosis. History.*—B. K., a boy, aged 4 months, was admitted to the hospital, Dec. 20, 1921. The mother had active pulmonary tuberculosis. The baby was breast fed for three days, then artificially fed at an infant welfare station, from which it was referred to the Babies' Dispensary for treatment and diagnosis.

Physical Examination.—The patient was a well developed and fairly well nourished infant of 4 months, acutely ill with high fever and very irritable. There was a large furuncle on the neck and numerous papules on the buttocks. The right ear was discharging pus. Clinically, the lungs were negative to auscultation, percussion, etc. A roentgenogram of the chest showed diffuse cloudiness of both lungs. The intracutaneous tuberculin test (1:1,000) was positive.

Treatment and Course.—The diet consisted of casein milk with added carbohydrate and orange juice. Ultraviolet therapy was begun at the end of the first week in the hospital and was continued until the infant died, which was nine weeks later. At first, the temperature curve dropped to normal within two weeks, and the infant seemed better, as a result of the clearing up of the otitis media. This temporary improvement, however, was followed by the return of fever, a drop in weight, an increase in the pulmonary findings and a regression in the general condition. The child died even though the ultraviolet therapy was started early and continued until the very last. A roentgenogram of the chest, five weeks after ultraviolet therapy, showed diffuse cloudiness of both lungs, and in seven weeks, dense cloudiness.

Therapeutic Results.—The pulmonary tuberculosis was not beneficially influenced by the ultraviolet treatments. The condition gradually progressed till death ensued, after seven weeks, from generalized miliary tuberculosis as substantiated by the postmortem findings.

CASE 9.—*Pulmonary tuberculosis; purpura hemorrhagica. History.*—P. W., a colored boy, aged 2 years, admitted, June 23, 1922, had been breast fed for one year and then artificially fed through an infant welfare station. He had an attack of pertussis at 1 year. Ten days previous to hospitalization, the child had a cough, nasal discharge, slight fever, and malaise. The rhinitis cleared up, but two days previous to hospital admission, the mother noticed blood on the pillow and subsequently discovered ulcers on the patient's tongue, lips and buccal mucous membranes, which bled only slightly. At the same time, there were small red spots on the left leg, abdomen and back.

Physical Examination.—The patient was well developed and nourished, and not acutely ill. Over the extremities and back were a few petechiae. On the buccal surfaces and the tip of the tongue were submucous hemorrhages. There was diminished undulatory movement anteriorly over both upper lobes of the lungs; there were palpable râles of the right chest; tactile fremitus was increased over both upper lobes; percussion was dull over the left upper lobe anteriorly and the right lower lobe posteriorly. The breath sounds were everywhere high pitched, with crepitant and sibilant râles throughout. The liver edge was palpable two finger breadths below the costal margin. The intracutaneous test (O. T., 1:1,000) was markedly positive, with cutaneous hemorrhage. The bleeding time was fourteen, fourteen and eighteen minutes (three trials). A roentgenogram showed cloudiness of both lungs, with more marked density on the left.

Treatment.—A 2 year diet with whole milk, farina soup, vegetables and fruit was given. The ultraviolet exposures were given two days apart, beginning with the lamp at 75 cm. for two minutes and ending at 65 cm. for thirteen minutes. The total treatments were eleven. The heat lamp was used

at 30 cm. for two minutes preceding the ultraviolet treatments, in order to dilate the peripheral capillaries.

Therapeutic Results.—These were poor. The temperature remained between 36 and 38 C. during the forty-one days in the hospital. In twenty-four days, the purpura disappeared; the bleeding time had become normal. The general condition of the patient remained the same. The pulmonary signs were unchanged.

The patient was then transferred to a convalescent hospital, only to return to Lakeside Hospital again in nineteen days with the classical signs of tuberculous meningitis (tubercle bacilli in the spinal fluid) and died five days later. The postmortem showed the common features of a general miliary tuberculosis with tuberculous meningitis.

This case represents the type of tuberculosis that is uninfluenced beneficially by the ultraviolet ray. Eleven treatments were probably too small for the production of any lasting result, although this patient would most likely have come to the same end, regardless of the number of treatments. We do not know whether the ultraviolet ray influenced the bleeding time, although Rollier states that, once a patient is subjected to sun baths, the manifestations of hemoptysis do not present themselves any more.

CASE 10.—*Generalized miliary tuberculosis with meningitis; nephritis; bilateral purulent otitis media. History.*—M. T., aged 5 years, admitted to the hospital, March 28, 1923, had had measles in August, 1922. A family visitor had pulmonary tuberculosis. Seven weeks before admission, the child became restless and did not sleep well. Two weeks later, the temperature was recorded daily and reached from 101 to 102 F. There had also been some frequency of urination.

Physical Examination.—The patient was undernourished and pale; coughing was considerable, hacking and somewhat paroxysmal. The cervical glands were palpable and of ordinary size. The lungs showed impairment of the undulatory movement of the left upper lobe with a dull percussion note and high pitched breath sounds; there were moist râles at the bases. The roentgenogram of the chest was strongly suggestive of miliary tuberculosis. The intracutaneous tuberculin test (O. T., 1:1,000) was positive. The tuberculin test was likewise positive, April 26, May 3, and May 8. The urine showed a moderate trace of albumin, numerous white blood corpuscles, and, repeatedly, some casts. A roentgenogram of the kidneys showed a suggestive shadow of the right kidney.

Treatment and Course.—The usual 5 year diet was given. Large doses of potassium citrate were ordered for the pyelitis, without effect. Ultraviolet ray exposures were given daily for nine days, beginning seven days after admission, and extending to seventeen days later. The initial dose was at 80 cm. for five minutes and the last one at 80 cm. for seven minutes; the fourth and fifth exposures were at 80 cm. for nine minutes. No effect was produced on the clinical condition in the nine exposures, the fatal course rapidly progressing till death occurred on the fortieth day of hospitalization, or twenty-three days after the discontinuance of the ray treatments, under the picture of tuberculous meningitis.

Therapeutic Results.—The ultraviolet ray was used for a short interval in this case without any effect on the miliary tuberculosis. It was then discontinued with the realization of the hopelessness of further treatment, and the patient subsequently died. The necropsy showed tuberculosis of the lungs, kidney and meninges.

COMMENT

From the records of these cases, it is evident that tuberculosis of the peritoneum and of the mesenteric glands is especially amenable to this form of therapy. This peculiarity corresponds, in general of course, to the experience of the past with other measures used in the treatment of these types, and must be due to some special advantage or characteristic of the lymphatic system of this part of the body. There is no doubt in our minds, however, that the results obtained in these types far surpass in regularity, speed and degree the improvement obtained by rest in bed, laparotomy or soap inunction. Within two weeks, the temperature drops and the patient feels and seems better, and usually in about six weeks the temperature has reached normal and there is a marked improvement in the physical signs.

The results in Case 4 are especially outstanding, because this patient absolutely refused to go to the hospital and remained at home under poor hygienic surroundings, partly up and about and partly in bed. The improvement under the ultraviolet ray therapy nevertheless was remarkable, and seems to us to emphasize the therapeutic value of these rays not only in this case, but also in the others in which the patients improved decidedly, while they were at the same time having the advantage of the ordinary hospital diet and confinement.

The enlarged bronchial glands were also distinctly influenced, as was shown by the gradual disappearance of the annoying paroxysmal coughing attacks. The improvement in the bronchial glands was not registered as definitely by the roentgen ray, which fact, however, does not negate the definite clinical observation just referred to.

The peripheral lymph nodes also became smaller, but seemingly did not respond as readily to the treatment as did the glands in the mesenteric and mediastinal regions. The additional use of local roentgen-ray therapy in these cases of peripheral gland involvement seems indicated. The two patients showing bone lesions both improved; the milder one rather quickly and the other only after a prolonged treatment. He had, however, infected sinuses, and it should be remembered that he was in a convalescent home for a whole year previous to admission to the hospital without any improvement, and that after being exposed to the ultraviolet rays, a definite, but slow betterment did take place.

The three patients with pulmonary tuberculosis of the miliary type remained absolutely uninfluenced by the ultraviolet ray therapy. In Case 8, the treatment was begun early enough and was persisted in vigorously enough to bring about an improvement. It seems to us that our experience with these cases would indicate that the effect of the ultraviolet ray in the other cases, in which there was improvement, must be of an indirect and nonspecific nature, enabling the body, in some manner, more rapidly to win its own fight against the disease.

The use of the heat lamp in Case 2 could not have had any direct effect on the therapeutic results, as it was used only for a period of five minutes before the patient was exposed to the quartz mercury lamp. In one of the fatal cases (Case 9) it was also used.

As stated above, it is not known how the ultraviolet rays accomplish their effect. It is probable, however, that the skin itself plays at least a part in the mechanism of the improvement.

Hoffmann[16] suggests that the skin is possibly the most important seat for the production of immune bodies. In this connection, he points out that many infectious diseases that involve the skin, such as scarlet fever, variola and chickenpox, produce a rather permanent immunity, whereas, in infections such as diphtheria, pneumonia and typhoid fever the opposite is likely to be true.

Rollier[17] attaches great importance to the development of pigment in the skin. It is his opinion that the patients who pigment readily make better and more rapid recoveries. In a recent article, he says: "It is

16. Hoffmann, E.: Ueber eine nach innen gerichtete Schutzfunktion der Haut (Esophylaxie) nebst Bemerkungen über die Entstehung der Paralyse, Deutsch. med. Wchnschr. 45:1233 (Nov. 6) 1919.

17. Rollier, A.: The Heliotherapy of Tuberculosis, Am. Rev. Tubere. 8:489 (Feb.) 1924.

very likely that pigment receives, supplies and increases the activity of the elements essential to the metabolism of the hormones."

From the beneficial effect obtained by the use of the ultraviolet rays and also by the administration of cod liver oil on the calcium metabolism of rickets, and from the old time conception of the value of cod liver oil in tuberculosis and of the importance of calcification in the healing process of tuberculosis, one might imagine that the beneficial effect of these rays in tuberculosis was due to an influence associated with the calcium metabolism in these patients.

However, Sweany, Weathers and McCluskey,[18] and Barkus,[19] have found that the calcium content of the blood of tuberculous patients is normal. Likewise, Smith [20] has shown that administration of cod liver oil, alone or in conjunction with calcium lactate, does not protect or aid guinea-pigs in recovering from tuberculosis, and Maver and Wells [21] also could not increase the calcium content of the various tissues of tuberculous guinea-pigs by feeding calcium lactate. The last named authors, however, did find that the calcium content of tuberculous tissue is increased over the normal, even when no sign of calcification is evident microscopically. And they make the further interesting statement that the lymph glands contain the highest percentage of calcium, and the lungs the lowest.

Whether another source of artificial light, for instance, one whose spectrum is like that of the sun, is as good as or possibly better than the quartz mercury vapor arc lamp in the treatment of these types of tuberculosis cannot be answered by us, because we have had no experience. We imagine, however, that if such a lamp is produced, its intensity will have to be close to that of the quartz mercury vapor arc lamp.

The value of these artificial sources of light lies to a great degree in their availability throughout the year and in the hands of the family physician.

CONCLUSIONS

1. The sole use of ultraviolet rays, as produced by the quartz mercury vapor arc lamp, in our experience, has been of decided value in the treatment of peritoneal, glandular and osseous tuberculosis.

2. Of the glandular forms of tuberculosis, the mesenteric is most rapidly improved; next, the mediastinal, and last, the peripheral.

3. Pulmonary tuberculosis of the miliary type, in our experience, remains absolutely uninfluenced by ultraviolet ray therapy, even though it is begun early in the course of the disease.

ABSTRACT OF DISCUSSION

DR. LLOYD M. OTIS, Celina, Ohio: The sun's rays are like the old fashioned shotgun prescription. They have mixed elements, and the infra-red are really inhibitive. Radiant heat doubtless has a detrimental effect in certain cases. The leukocytes are depressed, and the results are not so good as if we use ultraviolet alone with the direct quartz lamp. We should keep the lamp 36 inches away; if we get it closer, a heavy tan is produced and the effect of the rays is inhibited. Both the anterior and the posterior surface of the body can be used at the same time. The results obtained with the quartz lamp are marvelous in these cases. The general metabolism is built up and adds enough more to the patient's resistance so that it frequently becomes the turning point toward recovery. In a large tuberculous ulcer of the tongue, treated erroneously for malignancy, a few doses of ultraviolet light practically obliterated the lesion.

DR. H. J. GERSTENBERGER, Cleveland: The results that we get by using an artificial source of ultraviolet light are so marked that sometimes we wonder whether we are seeing straight or not. One of our patients, a colored girl, aged 7 years, came only to the dispensary for treatment. She refused to go to the hospital. She had a terribly distended abdomen, filled with gas and fluid. She was emaciated and looked very ill and tired. Ultraviolet ray therapy was started, and twelve days later the abdomen was reduced in size and we could then feel for the first time, in the right lower side, a large mass of matted together glands and intestine or omentum. Inside of six weeks the whole trouble was gone, although the child had remained at home in a poor environment and had come to the dispensary for treatment. It would seem to us from the experience we have had that the effect of the ultraviolet rays is to aid the body in fighting the disease and winning its own battle. It does not seem to be a specific effect. The actinic ray is unquestionably of decided value in this type of tuberculosis. Of how much actual value it is in other types it is more difficult to state, because the improvement is not so outstanding. It seems especially and preeminently effective in tuberculosis of the mesenteric glands. They seem to have a peculiar advantage over other glands. What this is, I do not know. Possibly their large number or their anatomic location play a rôle. The bronchial glands are next in order of response, and last the peripheral glands. Whether another combination of rays than that produced by the quartz mercury vapor arc lamp is more or less effective is a question that we cannot answer, because in this work our experience was limited to the use of the quartz lamp.

18. Sweany, H. C.; Weathers, A. T., and McCluskey, K. L.: Am. Rev. Tuberc. **8**: 405 (Jan.) 1924.
19. Barkus, Otakar: Am. Rev. Tuberc. **9**: 81 (March) 1924.
20. Smith, M. I.: Am. Rev. Tuberc. **7**: 48 (March) 1923.
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ANASTOMOSIS OF THE RECURRENT LARYNGEAL NERVE WITH THE DESCENDENS NONI

IN CASES OF RECURRENT LARYNGEAL PARALYSIS *

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Encouraged by evidence of returning function after the first two operations, I have continued my observations on the effect of suturing the descendens hypoglossi to the recurrent laryngeal nerve, with the cooperation of Dr. Chevalier Jackson. Up to the present time, twelve patients have passed through the clinic; in nine of these the paralysis of one or both vocal cords followed a thyroidectomy, in one a gunshot wound, and in one an attempt at suicide. One case was not of traumatic origin. Of this number, six patients have been operated on, two of them on both right and left nerves. Thus there were nine operations in all; once the recurrent nerve could not be found; in the remaining seven, a satisfactory suture was effected. The ninth was a neurolysis. In three cases, already function is returning. The others have been operated on too recently to warrant a report.

By way of preface, a word might be said of the function of the recurrent laryngeal nerve and the consequences of paralysis of one or both nerves. Total paralysis implies paralysis of the intrinsic muscles of the larynx; that is, the dilators, the constrictors and the intrinsic tensor. With complete loss of function in those intrinsic muscles, there follow of necessity two outstanding clinical disturbances, aphonia and dyspnea.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

According to Jackson, the terms "complete" or "total" paralysis should be used only in the condition of the larynx in which not only are the abductors, tensors and adductors paralyzed, but the reflex tonus gone. In this total paralysis, the glottic chink is wider and the dyspnea lessened; there is much air waste and the voice is very husky. Pulmonary complications may develop from absence of glottic cooperation, and the patient may even drown in his own secretions.

According to whether the paralysis of the posterior crico-arytenoid muscles is complete and bilateral will the dyspnea be more or less acute, and if bilateral and the cords have not assumed the cadaveric position, the respiratory embarrassment is such that a tracheotomy becomes a matter of urgent necessity rather than choice. Such was the case with the following patient:

CASE 1.—*A thyroidectomy, in June, 1922, with increasing difficulty in breathing. Tracheotomy by Dr. Jackson in February, 1923. Nerve suture, May, 1924. History.*—J. C., a woman, following a thyroidectomy elsewhere, had increasing difficulty in breathing. On the occasion of her first visit, I was alarmed at her condition. At no time had she entirely lost her voice, but her breathing was most distressing, not only during the day but at night, when it was so stridulous that it disturbed the entire household.

Series of Fourteen Cases of Paralysis of the Recurrent Laryngeal Nerve at the Author's Clinic

No.	Date	Source	Cause	Tube	Other Treatment	Operation	Comment
1	3/31/24	Letter	Thyroidectomy	Yes	Vent. cor. left		
2	1/ 3/24	University Hospital	Gunshot wound	No	None	Neurolysis	
3	6/24/23	University Hospital	Thyroidectomy	Yes	Dilatation	Suture	Recovery
4	2/13/23	University Hospital	Thyroidectomy	No	None	Failure	
5	3/20/23	Office	Thyroidectomy	No	None		
6	5/ 3/24	University Hospital	?	No	None	Lat. impl.	
7	8/20/23	Letter	Suicide	No	None		
8	6/19/23	University Hospital	Thyroidectomy	Yes	None	Suture	Recovery
9	11/19/23	Office	Thyroidectomy	Yes	None		
10	1/17/24	University Hospital	Thyroidectomy	Yes	None	Waiting	
11	12/11/23	University Hospital	Thyroidectomy	No	None	Rt. suture Lt. ?	Recovery
12	4/23/24	University Hospital	Thyriodectomy	Yes	Dilatation	Suture	
13	4/14/24	Office	Thyroidectomy	Yes	?		
14	5/31/24	University Hospital	.....	No			

On the slightest effort, as in walking across the room or even in talking, the patient became so cyanotic that I sent her immediately to the hospital and asked Dr. Jackson to see her. His examination revealed one cord entirely immobile and the other practically so, and without further delay a tracheotomy tube was introduced (in February, 1923). The patient needed only 2 mm. more abduction of the right cord to have a satisfactory glottic chink. In the hope that the paralyzed cord might eventually recover function, at least in part, the patient was kept under observation fourteen months, and during this time an attempt was made to widen the glottic chink by bouginage.

In December, 1923, Dr. Jackson reported: "The right cord has a very appreciable abductive excursion. If she can get as much abduction in the left cord as she now has in the right, I think she would be very comfortable." By April, 1924, the patient had improved under the dilations, and while during the day she got a sufficient amount of air for all ordinary purposes, she still had to remove the cork from the cannula for sleeping. Since she could not dispense with the tracheotomy tube altogether, the patient decided to try the effects of nerve suture, and was admitted to the neurosurgical clinic of the University Hospital, April 23, 1924.

Operation.—First stage, April 25, 1924: The first attempt, under local anesthesia, to expose the recurrent laryngeal nerve failed. The patient had frequent attacks of coughing, which so interrupted the dissection that the operation was discontinued and the wound closed.

Second stage, April 28, 1924: The wound was reopened under ether anesthesia. The sheath of the carotid vessels was freed and the vessels retracted outward. When the plane of tissue between the vessels was exposed, the inferior constrictor of the pharynx was uncovered, and just below it the recurrent laryngeal nerve was seen. The ramus descendens hypoglossi was readily isolated in the sheath of the carotid vessels and dissected free down to a point where it became enmeshed in the scar tissue of the original thyroidectomy. Fortunately, there was a long enough segment of the nerve above this point to make approximation possible to the recurrent laryngeal nerve without undue tension. The approximation was effected with a single epineural suture of arterial silk. So far as the approximation was concerned, the operation was recorded as most satisfactory. The wound was closed without drainage. For fixation of the head, a crinoline dressing was used.

In six cases of this series, the patient has been tracheotomized; and while in most instances, with the finger over the cannula, the patient could talk in audible tones, the inconvenience and the annoyance of a permanent tracheotomy tube were such that there was ample justification for an attempt, by nerve suture, to restore function to the paralyzed cords.

Of the two sequelae of paralysis of the vocal cords, embarrassment of respiration is more constant than speech disturbance, for various reasons. Paralysis of the intrinsic muscles, the lateral crico-arytenoid and the thyro-arytenoideus, implies only more or less impairment of phonation, rarely aphonia. One may find a monolateral or bilateral paralysis of the recurrent laryngeal nerve in a patient with an excellent voice. Not until the lost tonus results in a cadaveric glottis is it that the husky "stage whisper" aphonic stage is reached. In fact, as Jackson points out, this stage may never be reached; at least, in one case it had not occurred at the end of twenty-two years.

As with all adventures in therapeutic fields, great care should be exercised in the selection of cases, lest, because of failures in inappropriate cases, the method fall into disrepute. First of all, the question as to the duration of the paralysis will come up. How many years may elapse and function be restored? This inquiry might be made as to paralysis of any nerve or muscle, but cannot be answered in definite terms of months or years. It must be assumed that there is a remnant of muscle tissue. With complete atrophy and fibrosis, return of function after any nerve suture obviously would be out of the question. The success of the operation would depend also on free motility of the crico-arytenoid joint. No matter how satisfactory the nerve suture, motility could not be restored if there was fixation of this joint. To determine the degree of motility of the crico-arytenoid joint, passive motion is made with laryngeal forceps used through the direct laryngoscope. The third essential for the success of the operation is the presence of a segment of the nerve, undamaged and a centimeter or more below its point of bifurcation. The suitability of a given case for the operation under consideration is dependent, therefore, on (1) the duration of the paralysis, (2) the motility of the crico-arytenoid joint and (3) the existence of an undamaged segment of nerve. Furthermore, in the

selection of cases we must assume, as Dr. Tucker points out, first an absence of organic subglottic stenosis, most often the result of a high tracheotomy for paralytic stenosis, and, secondly, absence of stenosis of the cervical or mediastinal trachea, such as compression by a substernal goiter, tumor, aneurysm, adenopathy or abscess. The pressure of such lesions is easily determined by bronchoscopy.

The indications for the operation up to the present time have been twofold: (1) to enable the patient to dispense with a tracheotomy tube, and (2) to restore normal phonation. There can be no doubt as to the justification of the operation in either of the two contingencies, although the first is perhaps the more urgent and imperative of the two. A question has arisen as to whether in cases of disturbed phonation not due to trauma an attempt at relief by operation is justifiable. With this question we have already been confronted in one instance in which the patient, unable to talk louder than a whisper, was handicapped in the transaction of his business.

CASE 2.—*Paralysis of abductors of vocal cords. Lateral implantation of the ramus descendens hypoglossi into the recurrent nerve.* J. C. S., a man aged 60, was referred to the neurosurgical clinic, University Hospital, May 3, 1924, by Dr. H. B. Orton and Dr. Chevalier Jackson. One year before, the patient had developed a "chronic sore throat." Five months later, he became hoarse, and on consulting a physician was told that he had a paralysis of the vocal cords. On admission to the hospital, the patient could speak only in a whisper. There was no difficulty in breathing and no cough. An inquiry into the past history failed to elicit any history of a syphilitic infection, and the serologic tests in the hospital were negative. There was nothing in his previous history or physical status that had any bearing on the lesion.

On examination of the patient, Dr. Jackson wrote: "There is certainly impaired motility on the right side of the larynx, and the tensors and abductors seem to be affected as well as the posticus. In one case that you did last summer we have seen the most remarkable restoration of tension and tonus as well as widening of the glottic chink with every prospect of further improvement. From a laryngologic point of view it seems that this would be a very suitable case and it would be well to do the operation now before the other cord becomes affected."

Operation was performed, May 6, under ether anesthesia. A T-shaped incision, with a short oblique incision following the folds of the neck, and a longer vertical incision along the anterior border of the sternocleidomastoid muscle, gave ample exposure. The superior pole of the thyroid gland was mobilized and retracted downward and toward the midline. With the vessels displaced outward, the recurrent laryngeal nerve was readily exposed. The ramus descendens hypoglossi was then isolated to a point below the level of the ramus communicans. It was necessary to cut the latter to bring the ramus descendens hypoglossi into apposition with the recurrent nerve without tension. A longitudinal slit was made in the recurrent nerve, into which, with a single epineural silk suture, the central segment of the ramus descendens hypoglossi was secured.

In this case there had been no previous operation in the neck, as there had been in the earlier cases, so that normal anatomic relations were undisturbed, and the dissection was made without the slightest difficulty. The ether anesthesia was not satisfactory. It was discontinued a few moments after the operation began, and the operation was completed under local anesthesia. Whether the ether difficulty was attributable to some idiosyncrasy on the part of the patient or to the vocal cord lesion is an open question. The wound was closed with tier sutures without drainage. Fixation dressing was used. Convalescence was uninterrupted; the wound healed by first intention, and the patient was discharged, May 15.

As this was the only case in which the vocal cord lesion was not of traumatic origin, it presented features of peculiar interest. Generally speaking, paralysis of the abductor muscles is of syphilitic origin, and the lesions are bulbar. At a conjoined meeting of the Sections on Otology and Rhinolaryngology of the New York Academy of Medicine and the Section on Otology and Laryngology of the College of Physicians of Philadelphia, April 16, 1924, I brought up for discussion this question: Is operation justifiable in these "specific" cases? Dr. E. Ross Faulkner, who alone addressed his remarks to this question, was not inclined on first thought to favor operation. But in a personal communication, later, he writes:

> I had assumed in the course of my remarks that specific cases would not be suitable for operation; but as I have thought it over, I don't believe my assumption is warranted. These lesions, I think, are always bulbar, and I don't believe one need assume that there is any specific peripheral change, which would deny the probability of an anastomosis being successful. I would certainly give it a trial.

I have quoted Dr. Faulkner's opinion at length because of his preeminence as a laryngologist, for if, as I believe, his opinion is well founded, it at once opens up a much larger field for the operation under discussion than would be represented by the paralyses of traumatic origin. In the particular case which gave rise to the discussion, the specific origin of the paralysis had not been proved; it was only assumed. The operation proposed for the relief of paralysis of the recurrent laryngeal nerve is comparable in principle to that designed to relieve paralysis of the facial nerve. In the latter instance, innervation is supplied by transfer of the central segment of an adjacent motor nerve, be it the spinal accessory, the hypoglossal or, as I have recently employed, the descendens hypoglossi, to the peripheral segment of the facial nerve. When we came first to consider an appropriate nerve for recurrent laryngeal paralysis, our attention was at once directed to the descendens hypoglossi; and, after an anatomic review of the field, this nerve was selected, first, because of its accessibility; secondly, because it is a purely motor nerve; thirdly, because in the physiologic sense the muscles supplied by the recurrent nerve and the ramus descendens hypoglossi are a part of the same apparatus, and lastly, because the descendens hypoglossi could be sacrificed without any material ill effect. For these several considerations, the descendens hypoglossi, theoretically at least, was ideal.

After the plan of procedure had been outlined and two patients operated on, I learned through conversation with Sir Charles Ballance that he had conducted a series of experiments in monkeys with the same end in view. Since then the results of his investigations have been published.[1]

Ballance, in his experiments on monkeys, used both the descendens noni and the vagus, and with both there was restoration of function. From six to eight weeks after the operation the cord became straight and tense, indicating a tonus that had not been present before. Fifty days after the operation, stimulaion of the descendens noni provoked an abduction of the vocal cord. Seven months after an anastomosis with the vagus, stimulation at the site of anastomosis caused abduction of the vocal cord; excursions of the cord were not so wide as on the opposite or healthy side. Thus we have both experimental (Ballance) and clinical (Frazier) evidence that the operation as planned for

1. Ballance, Charles: Brit. J. Surg. **11**: 327 (Oct.) 1923.

the relief of recurrent nerve paralysis is founded on sound physiologic principles, has no insurmountable technical difficulties, and promises a reasonable hope of success.

The technical considerations are perhaps the least absorbing of this interesting problem, and concern only the few surgeons who are giving their time exclusively to neurosurgery. The principles to be observed do not differ from those of nerve suture elsewhere. As applied to this particular field, the question may come up, as it did in one of our series, whether a "lateral implantation" will be as effective as an "end-to-end" suture. We can answer this question only from the results of operations on other nerves. Lateral implantation in other cranial nerves (faciohypoglossus) and the peripheral nerves of the extremities has unquestionably been followed by functional recovery. In the case of the recurrent laryngeal nerve, the performance of a lateral implantation is more difficult because we are dealing with a nerve of slender proportions.

But certain conditions may prevail in individual cases in which one may hesitate to advise an end-to-end suture but might be willing to try a lateral implantation. Given a case, by way of illustration, in which the evidence of a total paralysis is lacking, if by total paralysis one implies not only loss of voluntary motion but also loss of muscle tone, muscle tone being preserved (as in Case 2), one might hesitate to cut the recurrent laryngeal nerve in order to effect an end-to-end approximation with the ramus descendens hypoglossi, fearing, should regeneration not follow, that the patient's condition might be worse after the operation than before. It is under circumstances such as these that a lateral implantation should be the operation of choice.

Given a case (as in Case 3) in which the paralysis is almost but not quite complete and bilateral, total paralysis of one vocal cord would help rather than hinder the patient. In conditions such as these, it would be not only perfectly proper, but preferable, to cut the recurrent laryngeal nerve for end-to-end suture.

CASE 3.—*Bilateral paralysis of the recurrent laryngeal nerve.* D. A. P., a man, aged 45, referred to the neurosurgical clinic by Dr. Chevalier Jackson, had had a bilateral thyroidectomy in two sittings; one lobe was removed twenty years before and one nineteen years before. The paralysis did not appear immediately after the operation, but came on gradually.

Abduction and adduction were found to have almost entirely disappeared, there being an excursion of only about 1 mm. The glottic chink was about 2 mm. wide at best. Tension was good, and the tonus still remained in the muscles because the cords had not assumed the cadaveric position.

Both Dr. Jackson and I advised an exploratory operation. The respiratory distress was not such that the patient had to be tracheotomized, but his whispering voice interfered with the duties of his profession. As already stated, should the operation have failed to restore function, with its nerve supply cut, the cord would assume later the cadaveric position and the condition of the patient would still be better than his present state.

It is to be assumed that if the damage to the recurrent laryngeal nerve can be repaired and the nerve preserved in its continuity, this should be the operation of choice. By a nerve liberation or nerve suture, if the site of compression or division can be found, the function of the nerve may be restored. Of the eight operations of this series, in only one (Case 4) was this possible.

CASE 4.—*Gunshot wound of the neck. Paralysis of right recurrent laryngeal nerve. Compression of nerve relieved by liberation.* J. S. B., a man, was admitted to the neurosurgical clinic of the University Hospital in January, 1924. He had been shot accidentally twenty years before, and immediately after the accident a tracheotomy tube was inserted. The patient wore the tube altogether six months. The dyspnea gradually improved, until at the present time he has no respiratory embarrassment under ordinary circumstances. When, however, he takes part in any exercise, such as boxing or wrestling, breathing becomes labored. To this extent he is badly handicapped. Phonation is husky, and he is unable to sing or speak in a loud tone of voice.

Dr. Jackson reported that the motility of the left side of the larynx was perfectly normal. The bullet was still in situ, but on the opposite side of the neck. If it were close to the motionless cord, one would suspect fixation of the cricoarytenoid joint. The right cord was not cadaveric; the margin was straight, but the right arytenoid was motionless.

Operation was performed under local anesthesia, in two sittings, January 8 and January 10. In the first stage, at a rather tedious dissection, efforts to find the right recurrent laryngeal nerve failed, and the wound was closed. Two days later, the wound was reopened, and to obtain a better exposure the sternohyoid and thyroid muscles were bisected. The superior pole of the thyroid gland was displaced outward, and in the groove behind the trachea the recurrent nerve was found and traced upward. Just above the lower level of the inferior constrictor of the pharynx, the nerve was found encased in cicatricial tissue, evidently the path of the bullet. The nerve was stimulated with an electrode, and Dr. Tucker, inspecting the vocal cord with a laryngoscope, reported a response but not an active one. As it would have been quite impossible to resect the lesion, we had to be content with a nerve liberation. Wound closure was performed in tier sutures, with no drainage.

Although, so far as I am aware, it has never been applied in the human being, the operation of neurotization has been employed experimentally and with a measure of success. Hoessly,[2] having previously resected the recurrent laryngeal nerve, implanted a branch of the spinal accessory, through a fenestra in the thyroid cartilage, directly into the adductor muscles; in two of the three animals, the operation succeeded in converting a cadaveric cord into one of the posticus position and converted a hoarse bark into normal phonation. The principle of this operation is sound, but at best there can be but partial restoration of function, that is, in the adductor group, whereas in the operation we advocate there is a potential possibility of functional return in all the muscles supplied by the recurrent laryngeal nerve.

In an earlier communication, I[3] described the anatomic landmarks of the recurrent laryngeal nerve. In all but one of our cases, the patient had had a thyroidectomy, and this adds tremendously to the difficulties of the operation. There is of necessity more or less scar tissue at the level at which the nerve must be exposed. As many of the patients had been wearing a tracheotomy tube for a number of months, there had been a low grade infection from the sinus along the course of the lymphatics. This created adhesions and helped to make the recognition and separation of anatomic planes still more difficult. One must be prepared, therefore, for a rather tedious dissection.

In the first communication, I recorded returning function in two cases. Since then recovery of function has been observed by Dr. Jackson in a third case:

CASE 5.—*Bilateral paralysis of the vocal cords. Nerve suture on one side. Remarkable improvement.* F. S., a woman, aged 57, was referred to the neurosurgical clinic of the University Hospital, June 19, 1923, by Dr. H. S. Fisher and Dr. Chevalier Jackson. Eleven years before the patient had had the right lobe of the thyroid removed in another

2. Hoessly: Beitr. z. klin. Chir. **99**: 186, 1916.
3. Frazier, C. H.: Ann. Surg. **79**: 161 (Feb.) 1924.

clinic, and, six years before, the left lobe. Following the second operation, her voice was reduced to a whisper, and in the course of time breathing gradually became more embarrassed, being stertorous at night, but better during the day.

One week before admission, Dr. Jackson reported as follows: "The left cord is completely paralyzed, all three muscles are completely motionless and the reflex tonus is entirely gone. On the right side only the posticus is paralyzed; there is still some motion in the lateralis and thyroarytenoideus. I suggest that you operate on the right side because the muscles on this side still retain their tonus, though eventually they will lose it."

June 19, a preliminary tracheotomy was done by Dr. Tucker. June 27 and 28, a two stage operation was performed under local anesthesia. At the first stage, isolation of the recurrent laryngeal nerve just below its bifurcation was done. At the second stage, the ramus descendens hypoglossi was isolated, divided and sutured to the peripheral stump of the recurrent laryngeal nerve with two epineural silk sutures. It was not necessary to cut the communicans. Wound closure without drainage was performed. Fixation dressing was used.

October 1, on examination by Dr. Jackson, there was movement of the right cord, but the glottis closed on inspiration instead of opening.

Dec. 3, 1923, Dr. Jackson commented thus: "The improvement since the anastomosis is remarkable. The posticus, enfeebled by long disuse, is already sufficiently strong to open the glottis unmistakably. It evidently tires quickly, but it is reasonable to look for steady improvement in vigor and sustained strength. The abductor is not synchronized with the voluntary deep inspiration, but the patient's statement as to subjective improvement in airway would indicate a progressive improvement in synchronism. Breathing exercises should be helpful, because on voluntary deep inspiration the posticus in normal beings acts more strongly than at any other time. It is true that the person does not consciously contract his posticus as he would his biceps, but the contraction of the posticus for the abduction of deep inspiration is part of the coordinated respiratory movements set in motion by the volition to take a deep breath. It would be well also to hold the breath, as suggested by Professor Sterling."

ABSTRACT OF DISCUSSION

DR. JOSEPH C. BECK, Chicago: I have had no experience with this operation that Dr. Frazier refers to. The operation I have used is that recommended by Dr. Grant of Denver, and it has been successful. I am sure that we see these cases often enough so that we ought to be able to do something besides dilation and cordiotomy. I have reunited the recurrent laryngeal nerve in traumatic cases, but there was no result, and I soon found out why. I should like to ask this question in regard to the phonation problem. The difficulty we found in these distressing cases of paralysis is that there is difficulty of respiration, at a time when there must no doubt be still phonation; but it probably is a good thing that the phonation disappears, because there would be relaxation. Perhaps I am mistaken.

DR. CHARLES H. FRAZIER, Philadelphia: I do not think it is altogether fair to cross-question a general surgeon on a laryngologic problem. But I think that Dr. Beck has stated the situation correctly. When the cords assume the cadaveric position, there is improvement as to the dyspnea but loss in phonation.

Cause of Brachialgia.—In spa practice more than half the patients complaining of brachialgia are suffering from fibrosis of the supraspinatus muscle or infraspinatus muscle. These muscles are especially exposed to trauma and to chills. Inflammation in these muscles will cause pressure effects on the suprascapular nerve, because the nerve lies on bone and the muscles it supplies are bounded by rigid walls. Pressure effects on the suprascapular nerve will account for a large proportion of cases of brachialgia.—Burt: *Proc. Roy, Soc. Med.* **17**:28 (Aug.) 1924.

RETINAL HEMORRHAGES IN THE NEW-BORN *

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The study of eye injuries of the new-born has attracted the attention of numerous writers during the last two generations. With the invention of the ophthalmoscope, men began to study the eyegrounds of the new-born as well as of the adult. Soon papers appeared dealing with the eyeground anomalies as discovered during the first hours and days of life. In the recently published monograph of Ehrenfest,[1] the subject is presented in a manner that brings home again the importance of a possible correlation of ocular findings of all sorts with definite features of the labor, since an understanding of such correlation would help in preventing some of the sequelae of birth injuries. How far ocular examinations may assist in diagnosticating intracranial lesions and what the relationship is between ophthalmologic phenomena and labor is a field still full of possibilities, if one is to judge by a study of the literature of the last fifty years. This literature has been gone into very carefully by Ehrenfest, who says:[2]

The first examinations of this kind date back to Jaeger in 1861. An elaborate paper by Stumpf and Sicherer[3] presents an interesting history of the various efforts made in this direction. These two investigators, from the study of a very large material, arrive, among others, at the following conclusions: The corpus vitreum was always found normal. The eyeground of the new-born in general resembles that of the adult, though, as a rule, all the colors are lighter. If the examination is made very soon after birth, a distinct venous stasis is common. The papilla usually appears normal, but in some cases (as also emphasized by Jaeger and Koenigstein) is from a dark gray to a bluish gray. The usually coexisting reddish discoloration at the scleral edge with fine, red, radiary hemorrhagic lines, permits the interpretation of the darker and grayish hue of the papilla as due to a hemorrhage into the subvaginal space of the dural sheath. Within a few days the blood is resorbed and the color becomes normal.

Most striking in the ophthalmoscopic examination are the relatively common hemorrhages in various portions of the eye. The marked difference in the percentage figures of their frequency as given by the various authors probably is due to the difference in the time when the examinations were made. Smaller hemorrhages are speedily resorbed and quickly become invisible. Sicherer's figures are based on observations made within twenty-four hours after birth.

Sicherer found binocular hemorrhages twenty-three times in his 191 babies. The right eye was involved in fourteen, the left in five instances. Ehrenfest continues:

All investigators agree that these hemorrhages are fresh and could not possibly have developed during intra-uterine life. Sicherer agrees with Schleich that the hemorrhages from the finer retinal vessels are the result of a congestion, and that, therefore, etiologically they stand in some relation to the minute and larger cerebral hemorrhages.

The suggestion has been made that the congestion in the eye develops only secondarily to an intracranial hypertension. Compression of the sinus cavernosus interferes with the normal emptying of the ophthalmic vein in spite of the partial relief offered through the existing anastomoses with veins of the face. More unfavorable under such conditions,

* Read before the Section on Ophthalmology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Ehrenfest: Birth Injuries of the Child, New York, D. Appleton & Co., 1922.
2. Ehrenfest: Birth Injuries of the Child, pp. 66-68.
3. Stumpf and Sicherer: Beitr. z. Geburtsh. u. Gynak. **13**: 408, 1909.

however, would prove the situation for the vena centralis retinae, which, as a rule, without any anastomosis with the vena ophthalmica, empties directly into the sinus cavernosus. The more common occurrence of such hemorrhages in the eyes of premature infants is generally ascribed to the particular fragility of the retinal vessels as the result of underdevelopment.

A further support of Schleich's theory that the congestion is the effect of the compression of the cavernosus sinus is seen by Sicherer in the fact that in the more common left anterior occipital presentation the hemorrhage is more likely to occur in the right eye, or, if bilateral, is more pronounced in the right eye, just the opposite findings being made in the right anterior presentation. This would seem to prove that the eye lesion is more frequently found on the side on which the sinus is exposed to greater pressure. Most of the writers agree that small peripheral hemorrhages are of no importance for vision later in life, while large hemorrhages, especially when situated near the macula, may permanently affect central vision. Such hemorrhages may cause permanent structural changes or interfere with further normal structural development.

Paul gives the following figures as expressing the relation of retinal hemorrhage to certain obstetric anomalies: Narrow pelvis, 50 per cent.; prematurity, 40 per cent.; complicated and protracted labor, 40 per cent.; normal labors with a child of normal size, 20 per cent. He lays special stress on asphyxiation as the cause of the ocular hemorrhage.

In the opinion of Kearney, the ophthalmoscopic study of the eyeground of the new-born offers one of the earliest and most reliable means of diagnosing intracranial hypertension. He described the characteristic ocular findings as follows: "There may be seen a mild edematous blurring of the upper and lower margins in the first few days of life, later an edematous blurring of the entire surface of the nerve head and all its margins. When the intracranial hemorrhage is severe and the tension greatly increased, gross edematous changes may appear quite early, the edema being confined to the nasal half of the disk, or affecting the entire disk, a typical papilledema."

He continues:[4]

Systematic studies of the eyegrounds on large numbers of new-born infants leave no doubt concerning the frequency of retinal hemorrhages. They have been ascertained, e. g., by Schleich, in 32 per cent., and by Paul in 34.5 per cent. of children examined in this manner. They are likely to be discovered in a much larger number of instances if the examinations are made within the first twenty-four hours, because in many cases the changes are slight and disappear quickly. The retina of both eyes was found involved in twenty-nine out of forty-nine cases examined by Schleich, and in twenty-three of sixty-five studied by Sicherer. In an anatomic study of the eyes of new-born infants, Naumoff discovered pathologic conditions in 25 per cent., the majority of them being retinal hemorrhages. A still higher percentage is given in a pathologic-anatomic investigation of Coburn, made on the eyes of thirty-seven infants, either stillborn or dying within the first three days. He found seventeen cases of retinal hemorrhage (46 per cent.), and thirteen subretinal and four subhyaloidal hematomas. It seems obvious that the anatomic study of the eyes of infants, stillborn or dying within a few days, will yield a relatively higher percentage of retinal hemorrhages than the ophthalmoscopic examination of living infants. In a considerable number of those available for anatomic investigation, death probably was caused by serious cranial or intracranial injuries. As amply explained in foregoing pages, such traumatic lesions frequently result in changes within the eye.

Histologic research has demonstrated that these hemorrhages are situated more commonly in the posterior portion of the retina near the macula, and that they are most extensive in the layers of the nerve fibers and ganglion cells.

Larger hemorrhages are readily seen by the ophthalmoscope in the form of hemorrhagic spots, at times occupying the entire eyeground, or running in a radial direction along larger vessels. The minor changes due to small hemorrhages and to congestion have been described in detail in Chapter V.

Various theories have been advanced to explain their causation. Koenigstein's theory of an active hyperemization of the

TABLE 1.—*Findings in Nineteen Cases in Which Hemorrhages Occurred Within Twenty-Four Hours.**

Mother							Child				
Age	Parity	Pelvis	Fetal Presentation	Duration of Labor, Hours	Anesthetic	Character of Delivery	Age at Time of Exam., Hours	Sex	Asphyxia	Clotting Time Minutes	Findings
25	Multipara	Normal	R. O. P.	22	Morphin-scopolamin	Perineal; forceps	10¾	♀	None	4½	R., many striate hemorrhages, temporal side of disk
19	Primipara	Normal	R. O. P.	4⅝	Nitrous oxid-chloroform	Perineal; forceps	15	♂	None	3½	L., striate hemorrhages, temporal side of disk
29	Multipara	Normal	L. O. P.	8¼	Chloroform	Spontaneous	3¼	♀	None	4⅛	R., few triate hemorrhages at lower pole of disk
18	Primipara	Normal	R. O. P.	9¾	Morphin-scopolamin	Episiotomy; perineal; forceps	16½	♀	None	4⁵⁵/₆₀	R., hemorrhage about disk
25	Multipara	Normal	Vertex R. O. P.	7¾	Morphin-scopolamin	Perineal; forceps	6½	♂	Slight	4	R., many hemorrhages about disk; few in macula
19	Primipara	Contracted	L. O. P. induced	2½	Morphin-scopolamin	Perineal; forceps	15½	♀	Apnea 15 min. mucus	3⁵⁰/₆₀	Deep hemorrhages, vicinity of both disks
31	Multipara	Normal	R. O. P.	2⅓	Nitrous oxid-chloroform	Spontaneous	3	♀	None	5¼	Many small radial hemorrhages in deep layers, both eyes
27	Primipara	Normal	R. O. P.	12	Morphin-scopolamin	Episiotomy spontaneous	17½	♀	None	3	Deep hemorrhages, both eyes; disappeared from left first
36	Primipara	Normal	R. O. P.	10½	Morphin-scopolamin	Perineal; forceps	8	♀	None	4¼	R., retinal hemorrhage
32	Primipara	Normal	R. O. P.	19	Morphin-scopolamin	Perineal; forceps	22	♂	Slight cyanosis	5¾	Many hemorrhages in deep layers, left eye
27	Multipara	Normal	L. O. A.	2¼	Nitrous oxid	Induced	4½	♀	None	5	Retinal hemorrhages about both disks
36	Multipara	Normal	S. L. P.	4	Chloroform	.....	9	♂	None	3¼	Left, hemorrhage irregular in arrangement; hazy disk borders
32	Multipara	Normal	R. O. P.	7	Chloroform	Spontaneous	11½	♀	None	4¾	Many deep hemorrhages of both retinas
23	Multipara	Normal	R. O. A.	16	Morphin-scopolamin	Spontaneous	14	♂	None	5½	Left, few striate hemorrhages
19	Primipara	Contracted	R. O. A.	14½	Morphin-scopolamin	Episiotomy spontaneous	16	♀	None	8	R., radial hemorrhages along large vessels
20	Multipara	Old fracture of coccyx	L. O. A.	15⅔	Nitrous oxid-oxygen	Spontaneous	12	♀	None	7	Many radial hemorrhages about disk, both eyes
32	Multipara	Normal	L. O. P.	3⅔	Morphin-scopolamin	Perineal; forceps	2½	♂	None	7	R., few radial hemorrhages about disk
21	Multipara	Normal	L. O. A.	.....	Morphin-scopolamin	Episiotomy	7½	♂	None	2	Retinal hemorrhage; clots present 12 days after birth
35	Multipara	Normal	Brow	12	Nitrous oxid-chloroform	Podalic version	15½	♀	Slight cyanosis; spontaneous breathing	...	R., few striate hemorrhages, nasal side of disk

* In this table and in Table 2, all the patients were American; the Wassermann reaction was negative, and the pregnancy was normal. The symbol ♂ indicates male; ♀, female.

4. Ehrenfest: Birth Injuries of the Child, pp. 140-142.

eye with the first cry now seems obsolete. Most of the modern writers incline to the belief that retinal hemorrhages, when not obviously produced by a direct insult to the bulbus, are due to an excessive congestion of certain vessels during labor. Naumoff assumed that during the compression of the head in the molding process some of the cerebrospinal fluid is pressed into the subvaginal (intersheath) space of the optic nerve, and there causes a strangulation of the vena centralis retinae. Such a widening of the subvaginal space, however, has been denied by Hippel, who, indeed, found this space to be very narrow or even entirely absent in some cases of retinal hemorrhage. He failed to discover any anatomic condition to explain the predilection of the region of the papilla and macula as seats of these hemorrhages. Thomson and Buchanan, on the other hand, found no traces of retinal hemorrhage in some cases in which the bulbus undeniably had been exposed to severe pressure and, therefore, they assumed an etiologic importance of increased fetal blood pressure due to interference with cord or placental circulation during intra-uterine life. This explanation has been refuted by Stumpf, Sicherer and Schleich, who emphasized that the freshness of the extravasated blood proves that the hemorrhage is of natal and not of prenatal origin. Paul blamed strong compression of the jugular vein by a tight coiling of the cord around the neck. But he was answered by Stumpf, who found retinal hemorrhages in only 14 per cent. of cases in which the cord was around the neck, but in 24 per cent. without any cord anomaly. Naumoff's findings of fresh hemorrhages in infants who had died during labor evidently justify his conclusion that retinal hemorrhages are truly natal, neither prenatal as claimed by Thomson and Buchanan, nor immediately postnatal as explained by Koenigstein.

The notorious thinness of the walls of the retinal blood vessels is often mentioned by writers. But it seems that the fact that a child exhibiting a retinal hemorrhage was premature often is only incidentally mentioned by a writer, chiefly to emphasize that this small head could not have been subjected to excessive compression during its passage through a normal pelvic canal (e. g., a case of Thomson and Buchanan). The evident vulnerability of all vessels within the cranium of a premature and small infant is today of recognized significance in the occurrence of intracranial hemorrhages and might also be found of importance in the origin of retinal hemorrhages. Paul placed the incidence of retinal hemorrhage for premature infants at the strikingly high figure of 40 per cent. Stumpf, apparently laying more stress on the syphilitic infection, proved an apparent predisposition of the premature, congenital syphilitic infant for retinal hemorrhages.

Stumpf suggested that, as the head measurements of males were greater than in females, such heads would be subjected to greater pressure, and that we should find a greater number of retinal hemorrages in boys than in girls. In addition, Ehrenfest says:

> Wolff pointed to the possible or even probable relation of these ocular hemorrhages to asphyxiation, the latter, in his opinion, being evidenced by the frequency of concomitant ecchymoses in other organs of the infant.

In my study, a series of 190 infants were examined in the obstetric department of Washington University, at Barnes Hospital, shortly after birth, with the purpose in mind of noting birth injuries or any anomalies that might appear. All infants had pupils dilated with a solution of 0.1 per cent. of atropin sulphate. Most infants were given a pacifier, which enabled one to finish the examination promptly. Examinations were made with the electric ophthalmoscope by the direct method. In view of the acknowledged fact that small hemorrhages of the retina disappear quickly, I am differentiating between the 157 babies examined the first twenty-four hours and the thirty-three seen after the first day of life. All babies had received prophylactic treatment after the method of Credé.

In five cases the cornea was found to be steamy. Three of these were the children of primiparas, one of whom had been in labor seventy-nine hours. The condition in at least one baby was due to silver nitrate. None of these five showed hemorrhages.

One patient had persistent pupillary membranes. This was a seven months baby who died within twenty-four hours of birth. The vitreous was never found abnormal in appearance in the entire series. Although looked for carefully, a paralysis of an extrinsic eye muscle could not be found. In another child just outside the series, i. e., older than 24 hours, a nystagmus was found. The child had been delivered by cesarean section and the case will be discussed later. The retinal picture in all of the series of 157 showed a fairly frequent increase in caliber of the veins. The optic disks were frequently blue gray in appearance. In such cases the disk border showed no pathologic change. On the other hand, the blue gray color was also found in a case of intracranial injury not included in this series.

Of twenty-two examined before six hours, four showed retinal hemorrhages.

Of thirty-four examined between six and twelve hours, seven showed retinal hemorrhages.

Of fifty-five examined between twelve and eighteen hours, seven showed retinal hemorrhages.

Of forty-six examined between eighteen and twenty-four hours, one showed retinal hemorrhage.

In the thirty-three patients examined after the first day of life, hemorrhages were found four times. (As stated before, in order to permit more ready comparison with similar series in the literature, the latter cases are reported separately.)

Hemorrhages, when present, were arranged radially about the disk in eight of nineteen cases, and were striate in character. Larger hemorrhages of circular form and deeper ones of irregular contour were also

TABLE 2.—*Findings in Four Cases in Which There Was Hemorrhage When Infant Was Examined After First Day*

Mother							Child				
Age	Parity	Pelvis	Fetal Presentation	Duration of Labor, Hours	Anesthetic	Character of Delivery	Age at Time of Exam., Hours	Sex	Asphyxia	Clotting Time Minutes	Findings
20	Primipara	Normal	R. O. P.	37	.....	Episiotomy; high forceps	24[36]/60	♂	None	...	Edema, both retinas; L. commotio retinae and hemorrhage
18	Primipara	Flat	Cesarean	11[13]/60	Ether	.....	27	♀	None	3½	R. and L., diffuse hemorrhages of deep layers of retina; nystagmus horizontal
35	Multipara	Normal	R. S. A.	9½	Nitrous oxid	Spontaneous	26	♀	Cyanosis; respiration spontaneous	3½	Both retinas show many deep hemorrhages
23	Primipara	Normal	R. O. P.	14½	Nitrous oxid-chloroform	Spontaneous	25	♂	None	...	R., retinal hemorrhage at disk

found. Nineteen showed hemorrhages of the retina within twenty-four hours. Of these, eight showed hemorrhages in the right eye, four in the left, and seven in both eyes.

Table 1 gives details regarding these nineteen cases.

Table 2 gives details regarding four hemorrhage cases examined after the first day of birth.

The Wassermann test was made in 138 cases and was five times positive but never when hemorrhages were found. In the series of 157 cases, labor was induced nine times and four of these infants showed hemorrhages. These four had been exposed to other factors, any one of which might have produced the lesions. I refer to flat or contracted pelvis and prematurity of the infant. These were probably of greater moment than the induction itself.

The presentation and hemorrhages occurred as in Table 3.

Summarizing the number of hemorrhages as related to the age and parity of the mother, we have the following:

1. Mothers under 25 years, seventy-four, or 47.1 per cent.

2. Mothers 25 years old or more, eighty-three, or 52.8 per cent.

Of nineteen babies showing retinal hemorrhages:

Six, or 31.58 per cent., were in Group 1.

Thirteen, or 68.4 per cent., were in Group 2.

TABLE 3.—*Presentation and Hemorrhages*

Presentation	Hemorrhages		
	Right Eye	Left Eye	Both Eyes
Left occipito-anterior	0	0	3
Left occipitoposterior	2	0	1
Right occipito-anterior	2	1	0
Right occipitoposterior	3	2	3
Breech	0	1	0
Brow	1	..	..

In our series of 157, the primiparas numbered sixty-eight, or 43.3 per cent., and the multiparas, 56 per cent. Of nineteen hemorrhage cases, 36 per cent. were from primiparas, and sixty-eight from multiparas. Thirty-six patients, or 22.9 per cent., of our series were colored, and 126, or 77 per cent., were white. Of the nineteen patients who had hemorrhages, four, or 21 per cent., were colored, and fifteen, or 78.9 per cent., were white.

Forceps were used in sixty-nine cases, or 43.9 per cent

Eight of nineteen, or 42 per cent., of babies having hemorrhages were born with the aid of forceps. It should be noted that forty-eight of the sixty-nine cases in which forceps were applied were classified as perineal. In other words, the forceps were used when the head was already down on the perineum.

Twenty-four hours was the longest period any of the nineteen mothers were in labor, and the pelvis was contracted in two of the nineteen whose babies showed ocular hemorrhages. Twelve babies were girls, and seven were boys. Asphyxia of slight degree was noted three times, and a fourth time a child was apneic for fifteen minutes. The clotting time was taken whenever retinal hemorrhages were found. In no case did it exceed eight minutes, and in most patients it was under six.

In the series in which babies were examined after they were 24 hours of age, one child after thirty-seven hours of labor showed commotio retinae in the left eye in a right occipitoposterior presentation. This was a high forceps delivery. Another patient was delivered by a cesarean section because of a flat pelvis, and her child showed retinal hemorrhages. She was a primipara, 18 years of age. Her baby had a pronounced nystagmus, which disappeared in a few days.

The asphyxia noted several times was always slight, and, while possibly a factor, could scarcely be the principal cause of the production of retinal hemorrhages. Changes in the vessel walls from syphilis can certainly be ruled out, as not one patient with hemorrhages gave a positive Wassermann reaction. Since twelve of the nineteen patients showing retinal hemorrhages were girls, Stumpf's theory fails of confirmation. It will be recalled that he suggested that the heads of the male infants are subjected to more pressure because their head measurements are greater. In this series of 157 cases, retinal hemorrhages were found at the rate of 12.1 per cent. It will be recalled that percentages varying between 3 and 30 have been reported. However, these observers did not limit themselves to examination within twenty-four hours of birth. If, as Sicherer suggests, obstruction of circulation takes place in a definite area with the result that retinal hemorrhages occur on the corresponding side, my findings in these cases do not tend to substantiate it.

ABSTRACT OF DISCUSSION

DR. F. PHINIZY CALHOUN, Atlanta, Ga.: My interest in Dr. Jacobs' paper is occasioned by a similar investigation of the fundus of the new-born infant in conjunction with the examination of the spinal fluid by Dr. Hines Roberts. He, working independently, found, in his first series of 103 cases, the following important facts: (1) frequent hemorrhage into the spinal fluid in the course of apparently normal labor; (2) urobilin constantly present in the spinal fluid and blood serum; (3) positive Wassermann reactions in the spinal fluid in 23 per cent. of the cases, while only 9 per cent. were positive with the cord blood. Just what the relation is between these findings and retinal hemorrhages, I cannot say. Retinal hemorrhages in the new-born infant are more frequent than most of us believe, and the practical point in this paper is that whenever the hemorrhage is severe and is located in the macular region, it may, in some cases, account for certain unexplained amblyopias or macular degenerations seen in childhood.

DR. ARTHUR J. BEDELL, Albany, N. Y.: Dr. Jacobs' report was of sufficient interest to compel me to examine sixty-one new-born babies; four, as soon as they were born; four in the first hour, and the others within the first twenty-two hours of life. The mothers ranged in age from 15 to 43 years, the children from the first born to the eleventh. Some labors were normal; others were induced by version, by cesarean section, and one by low forceps. Two babies were premature, about seven months. The pupils varied in size from 2 to 4 mm. under the light of the ordinary electric otoscope. Homatropin and cocain were instilled, and a few minutes later the ophthalmoscopic examination was made. Albany babies are not sophisticated, but come into the world with very little understanding of what is expected of them, as they do not accept the pacifier. In manipulation, we found two things that helped: One was to wait until the first orbicularis spasm stopped, and the other was to bend the head on the chest in a position somewhat similar to that of a child in utero. With a plus 20, the media were studied, and, when in doubt, a loop was used; the fundus was then examined. In this group there were four cases of nystagmus. There were twenty-six cases with embryologic changes: one, on the posterior capsule; one, a persistent hyaloid, and twenty-four, pupillary membranes. These varied in size from a single thread to a bundle of fibers. Some were attached in a single place, while in others the web extended from one side of the iris to the other. One patient showed very marked proliferation of iris pigment. In the 122 eyes, retinal hemorrhage was found in only nine. Five were small, thin, superficial linear extravasations along the blood

vessels; one was subhyaloid, and three were multiple extravasations around the disk. Examination showed that there was no relation between the presence of the hemorrhage and the age of the mother, the nature of the presentation or the sex. However, in the cases of especially difficult labor there were no hemorrhages. Severe toxemia of the mother did not cause hemorrhage. Finally, this short series did not seem to uphold the theory that pressure on the head was an active causative agent in the production of intra-ocular hemorrhage.

DR. MAX W. JACOBS, St. Louis: A Wassermann test of the spinal fluid was made in some of these cases, but only when there were special indications for it, and in so small a number that I felt it would not be of very great value to go into that phase. The blood Wassermann test was made as a matter of routine, however, only after a certain date. That accounts for the fact that not all these infants had a blood Wassermann test made. The matter of pressure that Dr. Bedell spoke of is, I believe, entirely in line with my findings. Sicherer, a German investigator, put himself on record very definitely in a statement that in left anterior occipital presentation the hemorrhage is more likely to occur in the right eye; or, if bilateral, is more pronounced in the right eye; just the opposite findings being made in the right anterior presentation. This, he feels, proves that the eye lesion is more frequently found on the side on which the sinus is exposed to greater pressure. When pressure was over the right side, we did not find hemorrhage, as a rule, on that side.

THE ACTION OF BURIED GLASS CAPILLARIES OF RADIUM EMANATION ON PLANT AND ANIMAL TISSUES

AN EXPERIMENTAL AND CLINICAL STUDY *

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The early attempts to employ the roentgen rays and radium for therapeutic purposes were followed very frequently by more or less severe burns of the skin in the area of irradiation. It was shown subsequently that this effect was due to the action on the skin of the soft roentgen rays and the soft beta rays of radium. Methods were then developed of filtering off the soft radiations by the aid of various metals and other substances placed between the source of the radiations and the skin.

The methods of radium therapy commonly employed at present consist in the application of the radium over the surface of the area to be treated, or in the insertion into the tissue of metal needles containing radium. In both instances, the radium rays are filtered in such a manner that only the gamma rays of radium penetrate into the tissues and act as a therapeutic agent.

More recently, a method of radium therapy has been developed which consists of the insertion into the tissue of unfiltered bare minute glass capillaries filled with radium emanation. By the aid of this method, again, the soft beta rays of radium came into play. The clinical results obtained to date, as will be seen later, are not only superior to the early results obtained with the crude methods of unfiltered radiations, but in many instances superior to the modern methods of irradiation with filtered gamma rays. We have therefore undertaken to obtain experimental data as to the biologic effect of this method of irradiation, and thus to procure a better view of the mechanism of the action of this type of radium therapy.

THE MODE OF ACTION OF THE GLASS CAPILLARIES OF RADIUM EMANATION

Radium emanation, with which the capillaries are filled, is an elementary body in the state of a heavy gas, and represents the first active product of the decomposition of radium. Radium emanation is further decomposed in a manner identical with the decay of the radium element itself, and as a result of this process emits alpha, beta and gamma rays. The capillaries used in this investigation were from 1 to 5 mm. long, 0.25 mm. in diameter, and contained usually from 0.2 to 0.7 millicurie of radium emanation. The thin glass wall of the capillaries filters off only the alpha rays, and allows the free passage of both the beta and gamma rays of radium. The difference, consequently, between this method of radium therapy and the one in which filtered rays are used consists in the fact that in the former not only the gamma rays but also the soft beta rays of radium are employed. Whatever differences, biologic and clinical, there are to be found in this method of radium therapy, as compared with the method of filtered radium, must be due to the biologic and clinical action of the beta rays of radium.

ACTION ON PLANT TISSUES

In previous publications,[1] we have shown that neoplasia of plants presents an ideal tissue for the study of the biologic action of the roentgen rays and radium, since the results are not obscured by blood, lymph and connective tissue, as in the case of animal tumors.

Adult normal plant tissue, and particularly young growing tips of plants, crown gall and club root tissues were the materials used for the investigation. The normal tissues used consisted of young and adult roots of the purple-top turnip and the growing tips of the tobacco plant. The main neoplastic tissue used was the crown gall on the geranium. Crown gall is a disease of plants, tumor-like in nature, which can be reproduced artificially by the inoculation of a normal plant with a pure culture of a bacillus called *Bacterium tumefaciens*. Another neoplastic tissue employed in the investigation was the club root of cabbage and kohlrabi. This neoplastic tissue was obtained by infecting the roots of the plants with an infusion with a parasite, *Plasmodiophora brassica*. The main morphologic microscopic difference between the two neoplasias consists in the fact that, in crown gall tissue, the presence of the parasite cannot be detected, while in the club root the infected cells are filled with the spores of the infecting organism.

The method of inserting the glass capillaries was as follows: A pin hole opening was made in the desired part of the plant by means of a sterile needle, and the glass capillary was then introduced into the canal. The tube of radium emanation was left in the plant tissue for from one to fifteen days, and the plants were observed at regular intervals. Empty tubes, equal in size to those containing the emanation, were inserted in identical tissues as controls. The material, both the irradiated and the control, were examined microscopically.

Figure 1 represents cross sections of two purple-top turnips growing side by side. The plant shown at *A* received a glass capillary containing radium emanation, while the plant shown at *B* received only a sterile glass

* From the Cancer Division of the Montefiore Hospital.
* Read before the Section on Pathology and Physiology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Levin, Isaac; and Levine, Michael: Ann. Surg. 67: 442 (April) 1918; J. Cancer Res. 5: 243 (July) 1920; 7: 163 (April) 1922; 7: 171 (April) 1922.

tube. Plant A shows a necrotized area surrounding the radium tube, while Plant B shows a narrow line representing the region where the empty glass tube was inserted. Similar necrotic areas surrounding the inserted capillary of radium emanation were noted on gross inspection of crown gall tissue.

Microscopic studies of irradiated crown gall tissue were done from one to fifteen days after irradiation. The examination showed that the tissue surrounding the glass capillary is necrotized and drawn away from the capillary; the radial cell walls have collapsed so as to form a more or less compact layer of cell walls or cellulose around the capillary; the cells immediately surrounding the cellulose capsule have disintegrated, and one finds only occasionally the nucleus and cytoplasm in the process of disintegration. The layer of cells beyond this zone is apparently unaffected. Figure 2 represents a microscopic section of crown gall tissue into which a capillary of radium emanation was inserted for five days. *A* shows the region where the capillary was inserted. The cellulose capsule is visible at *B;* the disintegrating cells are visible at *C*. Beyond this area are seen normal nucleated cells.

Club root was treated in a manner similar to the crown gall tissue. Figure 3 shows a microscopic section of the root of a kohlrabi plant into which a capillary of radium emanation was inserted. *A* marks the region in which the capillary was inserted. The cellulose cushion is visible at *B*. The hypertrophied parasitized cells are not markedly affected by irradiation, since these cells are most probably devitalized by the parasite. The neoplastic tissue nearest to the cellulose cushion is devoid of cytoplasm and nuclei. In general, the same appearance is presented here as in the irradiated crown gall tissue.

ACTION ON ANIMAL TISSUES

The animal tissues used for the investigation were normal liver, spleen and bone marrow of rabbits, muscles and testes of white rats and mice, sarcoma of the white rat and carcinoma of the white mouse. The technic employed was as follows: A glass capillary containing from 0.3 to 0.7 or more millicuries of radium emanation each was sterilized either by boiling or by immersion in an alcoholic solution of iodin, and was inserted by the aid of a trocar needle into the tumor tissue.

The insertion of the capillaries of radium emanation into the liver, spleen and bone of a rabbit were done in the following manner: A laparotomy was performed, and from two to four capillaries were inserted by the aid of a trocar into the organ. From one to four weeks later, the animals were killed and the organ examined microscopically. Figure 4 shows a section of spleen into which capillaries were inserted. A part of the tissue nearest the inserted capillary and in a state of complete necrosis is shown at *A*. Spleen tissue surrounding the necrotic area shows extravasation, disturbances in the nuclei and protoplasm of the cells and endarteritic changes in the walls of the blood vessels (shown at *B*). All these changes were found in a small area surrounding the region into which the capillary was placed. At a greater distance from the capillary, the structure of the spleen appeared to be normal.

In a series of rabbits, an opening was drilled into the shaft of the long bone, and two or four radium emanation capillaries were placed in the bone marrow, the opening in the bone sealed with surgical wax, and the skin opening sutured. All the operations on the rabbits described above were done under ether anesthesia. Figure 5 shows bone and bone marrow into which a radium emanation capillary was placed four weeks before the animal was killed. At *A*, the bone marrow is apparently completely destroyed and replaced by young connective tissue.

White rats and mice were inoculated subcutaneously with sarcoma and carcinoma, and about two weeks later, when the subcutaneous tumors reached a certain size, one or two capillaries were inserted into the tumor. From four to fourteen days after the insertion, the animals were killed and the irradiated tumor tissue examined microscopically. Figure 6 shows a section of a carcinoma of a white mouse into which a capillary of radium emanation was inserted and kept for thirteen days. At *A* is shown the tumor tissue nearest the capillary, which is in a state of complete necrosis. At *B* is shown a second zone of tumor tissue farther from the capillary. In this zone, there are marked degenerative changes in the tumor cells, consisting of vacuolation of the protoplasm, pyknosis of nuclei, and karyolysis. The ultimate effect of irradiation, which was shown in the bone marrow and will be seen later in human material, takes place from six to eight weeks after irradiation. This stage could not be followed in these tumors, since they usually sloughed off completely two weeks after irradiation.

ACTION ON HUMAN MALIGNANT TUMORS

In the course of the last five years, the senior author has used this method extensively in his clinical work. Clinical material cannot be obtained in as orderly a manner as experimental material. Therefore, a composite picture must be drawn from a large surgical and postmortem material obtained during these years. Carcinoma or sarcoma tissue obtained about two weeks after irradiation shows a condition identical with the picture obtained in the animal tumors. The zone of tissue nearest to the capillary shows complete necrosis, and the second zone shows the degenerative process in the tumor cells described above. From six to eight weeks after irradiation, an entirely different picture presents itself. The necrotic tissue is absorbed and replaced by dense connective tissue, and the whole tumor shrinks in size. In some areas, one sees nothing but such connective tissue. In other areas there are noted within such connective tissue scattered small islands of degenerated carcinoma cells. Figure 7 shows a section of a carcinoma of the breast on the borderline of operability. The capillaries of radium emanation were inserted into the tumor, and eight weeks later a radical mastectomy was done. Between the two therapeutic stages, the tumor shrank considerably in size. Microscopically, many fields showed dense connective tissue and complete absence of carcinoma. The section in Figure 7 shows a few small islands of carcinoma cells surrounded by extensive connective tissue.

COMMENT

The analysis of the results obtained shows, in the first place, that the action of radium emanation capillaries on plant, animal and human tissue is quite analogous. The result of this action is complete necrosis of the first zone of tissue and cellular degeneration in the second zone. Subsequently, absorption of the necrotic tissue and formation of connective tissue take place. The cellulose cushion formed in the plant tissues seems to play a similar rôle to the connective tissue in animal and human material.

A superficial analysis of the results obtained may produce the impression that the beta rays which act on the first zone of tissue are a simple caustic agent. A closer study of the phenomena involved, however, shows that the mechanism of the action of beta rays differs widely from the caustic effects of heat or chemical agents and is qualitatively analogous to the action of the gamma rays, especially since the whole sequence of the tissue changes may be obtained by large amounts of gamma rays.

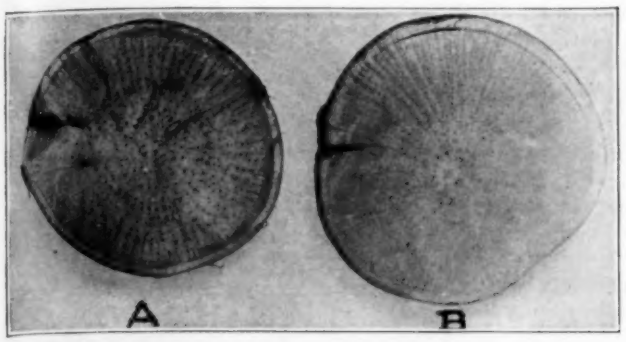

Fig. 1.—Two cross sections of purple top turnips: *A*, radium emanation capillary; *B*, sterile glass capillary for control.

The biologic action of the gamma rays of radium and the roentgen rays analogous to them must depend, in the ultimate analysis, on the intra-atomic action of these rays on the atoms of elements. This action, in accordance with the present day conception of physics, is as follows:

Gamma rays and roentgen rays are rays of light of very small wave lengths. When they enter an atom of matter, they disturb the electronic equilibrium and free a certain number of electrons from the influence of the positive nucleus of the atom. These free electrons travel in a certain direction with a given velocity, and, as a result, produce within the ether secondary scattered or characteristic roentgen rays. The results will be the same whether the original agents were the gamma rays or the roentgen rays.

A biologic effect of the rays on tissues means a change in the structure of the tissues and must be a result of changes in the atoms of the tissues. A gamma ray entering the tissues sets in motion a number of electrons. The latter produce secondary roentgen rays which influence the other component parts of the tissue. Beta rays are themselves electrons in motion and when they enter the tissue they must produce analogous secondary roentgen rays because beta rays of radium are products of the gamma rays of radium and must have a velocity similar to the velocity of the electrons produced in the tissue by the gamma rays of radium. Consequently, biologic action of the gamma and beta rays must be analogous. The difference is quantitative and is due to the fact that the ratio of beta and gamma rays in a unit of radium is about 100 to 1. Five millicuries of radium emanation, distributed in ten capillaries, will destroy 10 cubic millimeters of carcinoma. To produce the same effect by surface application, the gamma rays of 500 millicuries would have to be employed. The statement made by physicists that the biologic effect of one millicurie of radium emanation buried in the tissues equals 132 millicurie hours of surface application of filtered radium takes into account only the action of the gamma rays and disregards the action of the beta rays and their secondary roentgen rays.

CLINICAL RESULTS

During the last five years, the senior author has used this method of intratumoral insertion of buried capillary glass tubes of radium emanation in epithelioma of the skin, the lip, the tongue, the mucous membrane of the mouth, the tonsils, carcinoma of the breast, the cervix, the gastro-intestinal tract, the rectum, the urinary bladder, the prostate, osteosarcoma, fibrosarcoma and lymphosarcoma.

In general, the clinical results are very significant. Pathologic conditions that do not yield to large quantities of filtered rays may respond readily to the beta ray action of the radium emanation capillaries.

Detailed reports of the results obtained by this method in the various types of carcinoma and sarcoma will be published elsewhere. In this publication, only a few brief statements will be made as regards technic employed in the different conditions.

Epithelioma of the Skin.—Results obtained in this type of cases present probably the best evidence of the fact that the beta rays of radium do not act as a simple caustic. The capillaries are placed within the epithelioma, and are not allowed to enter the subcutaneous tissue. In from four to six weeks, the area is found to be covered with new epidermis. In some cases, this result was obtained in epitheliomas of the face and nose measuring nearly 2 cm. in diameter. Only those cases are selected for this method of radium therapy which do not respond readily to surface application of filtered radium.

Carcinoma of the Mouth.—The most striking phenomenon observed in this class of cases is the healing and covering with normal mucous membrane of ulcerations and craters formed by the carcinoma. The best results were obtained in carcinoma of the tonsil. In carcinoma of the tongue, the healing of the ulcerations increases the comfort of the patients, even though they ultimately succumb from the metastases in the cervical lymph nodes. In carcinoma of the floor of the mouth and the jaws, care must be taken to use only weak capillaries containing not more than 0.4 millicurie

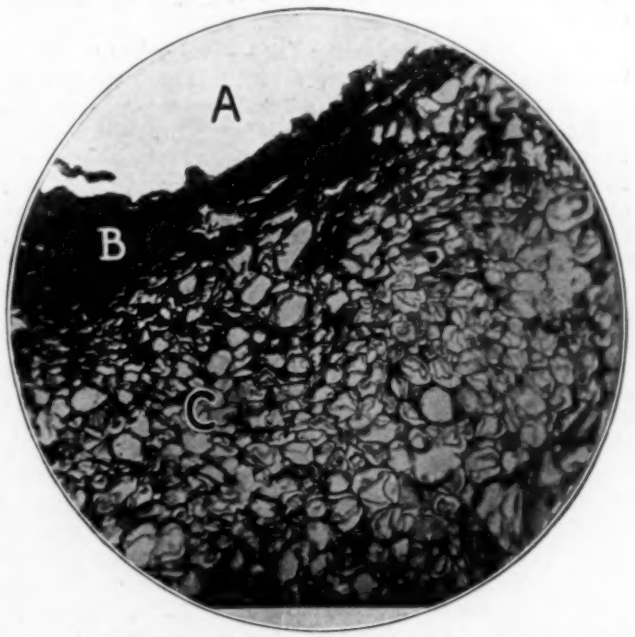

Fig. 2.—Microscopic section of crown gall tissue: *A*, region in which capillary was inserted; *B*, cellulose cushion; *C*, disintegrating cells.

of radium emanation, and to place them at a sufficient distance from the bone. Otherwise, necrosis of the bone may readily take place. The great majority of this class of cases treated were in a far advanced stage of the disease, and the ultimate results were unsatisfactory. The palliation and temporary relief obtained, however, were superior to anything observed through surface application of filtered radium or through roentgen-ray treatment.

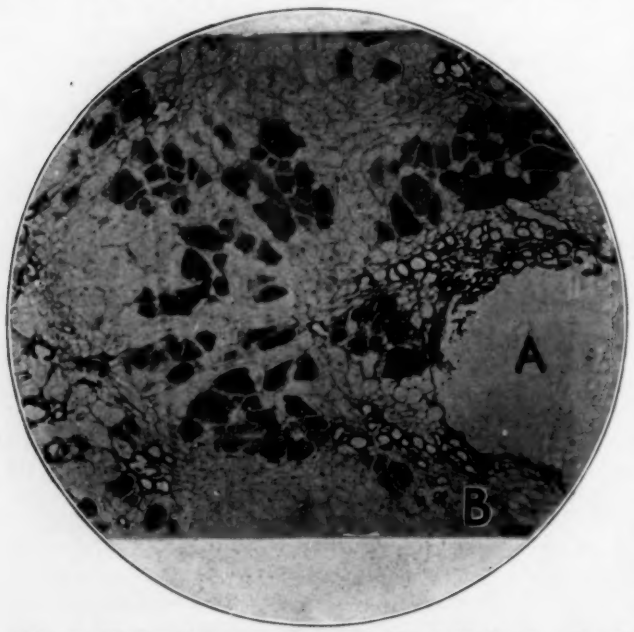

Fig. 3.—Microscopic section of the root of a kohlrabi: *A*, region in which the capillary was inserted; *B*, cellulose cushion.

Carcinoma of the Lower Lip.—The primary condition on the lip can be destroyed by this method no matter how extensive it is, but both local recurrence and metastasis in the lymph nodes frequently take place. Surgery is the method of choice in all operable cases. Should the condition be too extensive for an immediate operation, then the insertion of capillaries should be done. About eight weeks later, an excision of the primary growth with a dissection of the palpable cervical lymph nodes may be undertaken. In view of the development of postoperative radiotherapy, the question of the advisability of a routine block dissection in all cases of carcinoma of the lip must be reopened. The best result that we obtained by insertion of capillaries without the aid of any other method of therapy in a far advanced inoperable carcinoma of the lower lip was complete freedom from recurrence for two and a half years. The general results in carcinoma of the lower lip obtained by this method of insertion of radium emanation capillaries are much superior to the results obtained by the senior author in previous years by a combination of surface radium application, roentgen-ray therapy and diathermic coagulation.

Carcinoma of the Breast.—The general plan of treatment in carcinoma of the breast which the senior author employs to date is as follows: In cases in which there is no involvement of the lymph nodes of the axilla, a radical mastectomy is done, and this is followed by high voltage roentgen-ray therapy and surface application of radium to the axilla and the supraclavicular region. In cases in which metastases are present in the axilla, an insertion of capillaries of radium emanation is done into the tumor mass of the breast and into the mass in the axilla. The tumors shrink considerably, and those in the breast that were adherent to the chest wall may become free. The radium insertion is followed by high voltage roentgen-ray therapy. From four to six weeks later, a radical mastectomy is done. Very gratifying results have been obtained by the senior author in metastases into the supraclavicular lymph nodes which appear subsequent to a radical operation. This condition generally gives a poor prognosis. The method employed for these cases is the following: An incision is made over the palpable tumor in the supraclavicular region, radium emanation capillaries are inserted into the tumor mass, and the skin is stitched. This is followed by surface application of radium and by high voltage roentgen-ray therapy. In several instances, the patients are clinically well for from two to three years.

Carcinoma of the Cervix.—The results of radium and roentgen-ray therapy in carcinoma of the cervix are so satisfactory that many clinicians are beginning to consider radiotherapy the method of choice in these conditions. Burnam[2] reports on 700 cases of uterine, cervical and vaginal carcinoma treated with radium. His results are as follows: In 50 per cent. of the operable cases, 31 per cent. of borderline cases, 9 per cent. of inoperable cases, and 11 per cent. of recurrent inoperable cases, the patients remained well for more than three years. These results compare very favorably with those obtained by surgery. Moreover, the latter method of treatment makes no attempt to take care of the advanced inoperable or recurrent cases. Ochsner[3] states that during the last four years he attempted practically no surgical treatment in carcinoma of the cervix.

Thus, carcinoma of the cervix represents a class of cases for which there is the greatest promise in the development of the most efficient methods of radiotherapy. The technic of radiotherapy employed by the senior author in this class of cases is as follows: In cases in which there is a large cauliflower mass of the cervix, which bleeds profusely, the largest portion is

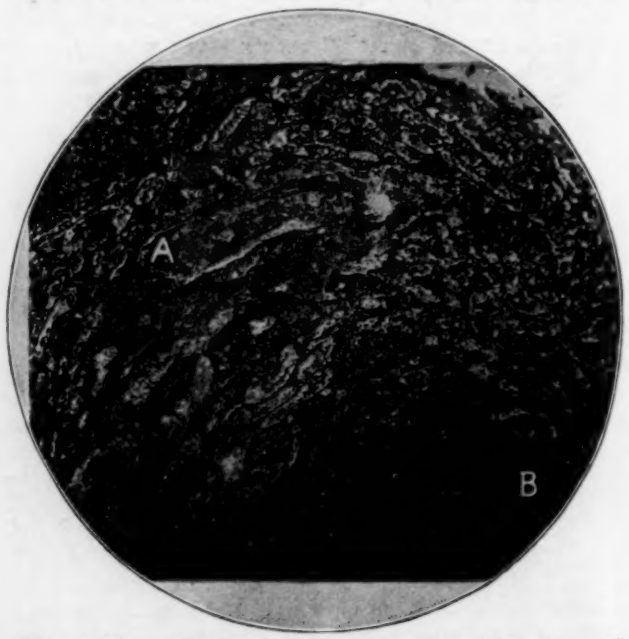

Fig. 4.—Microscopic section of the spleen of a rabbit: *A*, necrotic tissue nearest the inserted capillary; *B*, endarteritic blood vessel.

2. Burnam, C. F.: New York State J. Med. **20**: 316 (Oct.) 1920.
3. Ochsner, A. J.: Canad. Pract. **49**: 104, 1924.

removed by cautery and this is followed immediately by the insertion of capillaries into the walls of the cervix. In cases showing a crater-like formation of the cervix, the capillaries are inserted without a previous cauterization. In cases in which the broad ligaments are involved and there are fixed pelvic masses palpated, a laparotomy is performed and the capillaries are inserted into carcinoma tissue wherever it is found; i. e., the broad ligaments; the spaces between the bladder and the uterus, between the uterus and the rectum; into the glands, and also into the part of the cervix which cannot be reached through the vagina. The abdominal wound is closed and the capillaries are inserted into the lower portion of the cervix through the vagina. The abdominal operation is occasionally followed by a reaction, with a high temperature. The patients generally recover in a few days. In the majority of cases, no reaction takes place and the patients make an uneventful recovery. The radium treatment is accompanied in all cases by high voltage roentgen-ray therapy.

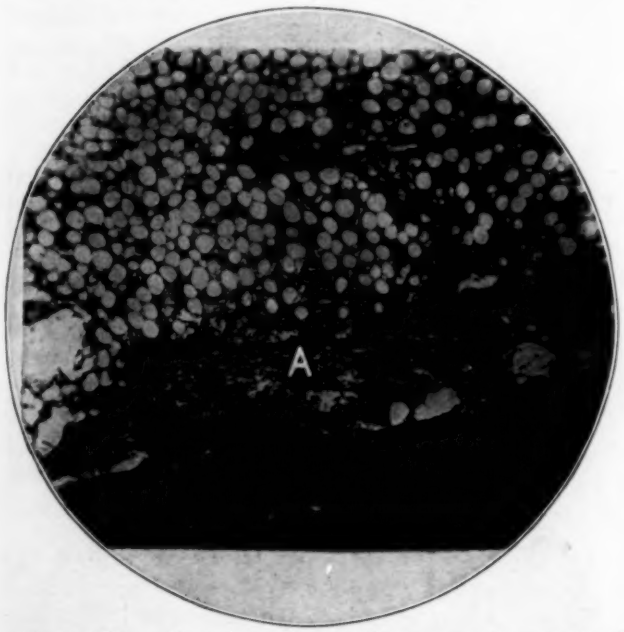

Fig. 5.—Microscopic section of bone and bone marrow from the leg of a rabbit: *A*, part of the bone marrow replaced by young connective tissue.

The best proof of the value of intraperitoneal insertion of radium emanation in carcinoma of the cervix is shown in the following case:

C. L., a woman, aged 42, entered Lenox Hill Hospital under the service of Dr. Gustav Seeligmann, in May, 1923, with advanced inoperable carcinoma of the cervix with involvement of the right broad ligament. A laparotomy was done, and radium emanation capillaries were inserted. The patient made an uneventful recovery. In December, 1923, seven months later, at the same hospital, Dr. Arthur Stein did a complete hysterectomy, which offered no unusual difficulties. At present, the patient is clinically well. As a general rule, however, the senior author does not favor hysterectomy after irradiation.

Carcinoma of the Gastro-Intestinal Tract and Rectum.—One of us [4] reported previously on intraperitoneal insertion of buried capillary glass tubes of radium emanation in carcinoma of the gastro-intestinal tract. Inoperable carcinoma of the gastro-intestinal tract presents the most hopeless type of cancer. Surface application of radium, and high voltage roentgen-ray therapy are generally ineffectual, and it is therefore of great importance to continue the investigation with the insertion of the capillaries of radium emanation in this type of cases.

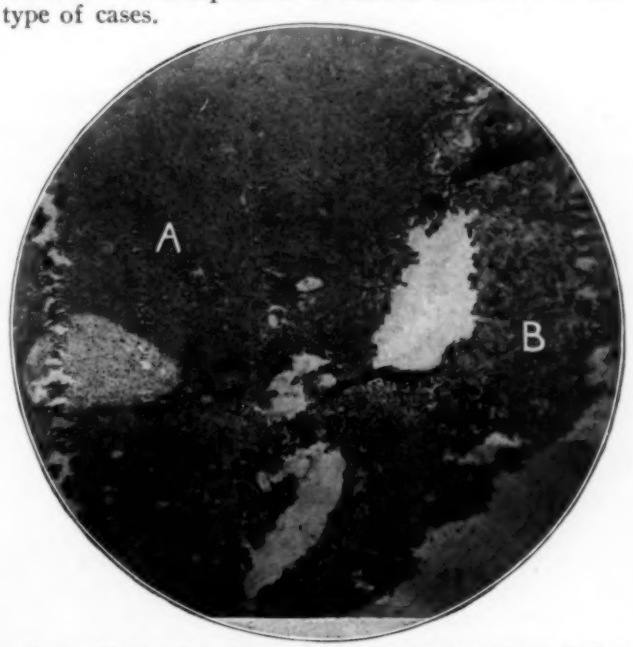

Fig. 6.—Microscopic section of a carcinoma in a white mouse: *A*, tissue nearest the capillary in a state of complete necrosis; *B*, second zone of tissue, degenerated cells.

Carcinoma of the Prostate and Bladder.—The insertion of glass capillaries of radium emanation into carcinomas of the prostate and bladder is to date the best single method of therapy for these conditions. The senior author [5] discussed this subject at length in a recent paper.

Fig. 7.—Microscopic section of a carcinoma of the breast showing a few small islands of carcinoma cells surrounded by connective tissue.

Sarcomas that are resistant to all other methods of radiotherapy may be influenced by the insertion of capillaries of radium emanation. A detailed report of the results in this class of cases is in preparation.

4. Levin, Isaac: Intraperitoneal Insertion of Buried Capillary Glass Tubes of Radium Emanation, J. A. M. A. **79**: 2074 (Dec. 16) 1922.

5. Levin, Isaac: Urol. & Cutan. Rev. **28**: 392 (July) 1924.

CONCLUSION

The intratumoral insertion of bare capillary glass tubes of radium emanation presents today the best single method of radiotherapy in various types of carcinoma and sarcoma for the following reasons: 1. It allows an even distribution of small quantinties of radiations throughout the tumor. 2. On account of the intimate contact of the radioactive substance with the tumor cells, the total amounts are small, and local results are obtained without any general effect on the organism. 3. Use is made of the beta rays, which do not act as a simple caustic agent but destroy the nearest cancer cells and at the same time create secondary gamma or roentgen rays in the tissues, and by the aid of these influence the cancer cells situated at a greater distance in a manner analogous to the action of the gamma rays of radium and the roentgen rays.

Thus, while it is true that to date the best results in cancer therapy are obtained by proper coordination between surgery and all methods of radiotherapy, it is imperative that more experimental work be done on the biologic action of the beta rays of radium.

ABSTRACT OF DISCUSSION

DR. FRANK E. SIMPSON, Chicago: This work is in line with that done by Dr. Halsey J. Bagg. It shows conclusively the remarkable results obtained with these glass capillary tubes. I have been using this method in my work for about five years—treating human carcinoma and sarcoma—and I believe that in certain cases it is a most effective method. In thirty-one cases of cancer of the tongue treated by this method, the glass tubes were inserted into the tongue, and in some cases into the glands of the neck. Any one who has seen the results we are getting will be in accord with our opinion that this is the best method we have at present for selected cases. There has been considerable discussion at this time concerning metal needles containing radium. I myself feel that there is no comparison between the two methods. About ten years ago I used the metal needles containing radium, but the method is now practically obsolete, except in a very few selected cases, having been replaced entirely by the method of inserting small capillary tubes of radium emanation into the tissue.

DR. ISAAC LEVIN, New York: I merely want to endorse what Dr. Simpson has said regarding the difference between the metal needle and the glass capillary. The metal needle presents nothing new and is not different in any way from a surface application of a metal capsule. Instead of placing the radium over the tongue, the cervix or any other part, one simply creates a canal first and then introduces the needle; but one is dealing with the same principle exactly. With the glass capillary one can distribute infinitesimally small amounts all through the tumor. This is certainly a better method and would appear to be a step forward in the radiotherapy of cancer.

Votive Offering of Medical Interest.—Among the many votive offerings (Donaria) of medical interest I collected in Italy, at the time of the Eleventh International Medical Congress, held in Rome in 1893, is a terra cotta model of a pedunculated fibroma of the labium majus. It is a very image of a vulvar fibroma, removed from a West Indian negress, which I had the opportunity of seeing in 1913 at Port-of-Spain, Trinidad. This interesting donarium, found with many others representing breasts, pudenda, wombs, ovaries, septate uteri, placentae, and small images of women, some fashioned in the kneeling posture of parturition, others with enormously hypertrophied breasts, came from the ancient Temple of Maternity in Capua. Vulvar fibromas are benign tumors. In the Civic Museum of Corneto Tarquinia I found a femur showing evidence of periosteal sarcoma.—L. W. Sambon: *Proc. Roy. Soc. Med.* **12**:79 (Sept.) 1924.

KÖHLER'S DISEASE OF THE TARSAL SCAPHOID OR OS NAVICULARE PEDIS RETARDATUM*

F. C. KIDNER, M.D.
AND
FELIPE MURO, M.D.
DETROIT

There are two distinct pathologic entities to which the name of Köhler's disease has been given. One of these occurs in the head of the second metatarsal, and the other in the scaphoid of the tarsus. A similar condition has been described by Kienböck as occurring in the carpus. In this paper, we shall deal only with the condition as seen in the tarsal scaphoid. We suggest as an accurate descriptive name the term os naviculare pedis retardatum. To correspond with this term, we suggest for the other two conditions the names metatarsus planus and os lunatum retardatum.

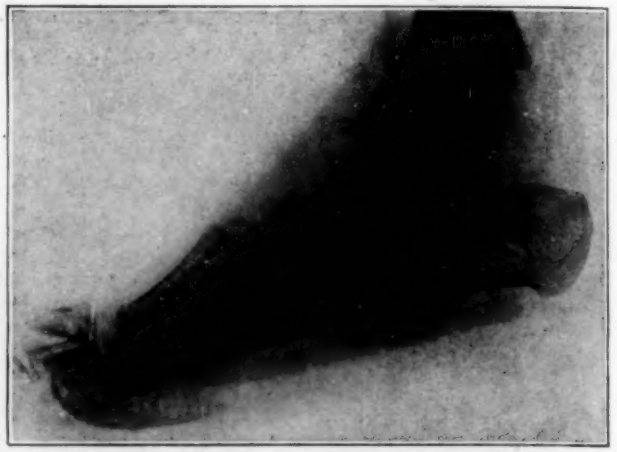

Fig. 1.—Case reported by Dwight as extra epiphysis of cuneiform bone.

We are presenting this paper because we recently had an opportunity to study a typical case of os naviculare pedis retardatum from both the clinical and the pathologic points of view.

REPORT OF CASE

A. B., a boy, aged 8 years came to the hospital clinic complaining of pain in the left foot. This pain occurred only when he was walking; it caused him to limp and interfered with his activities. It was of six weeks' duration. There was no history of injury sufficient to make any impression on the memory of the boy or his family. The boy had always been and was then perfectly healthy. There was no history of rickets, tuberculosis or syphilis. The boy was vigorous and healthy, but he limped and walked on the outer side of the left foot. He was normal in every other way, except for a tender, slightly swollen area in the region of his left tarsal scaphoid. There was pain at this point on extremes of motion, both active and passive. There was slight muscle

* From the orthopedic service of the Children's Hospital of Michigan.

* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

* Because of lack of space, this article is abbreviated in THE JOURNAL by the omission of a statistical table, including 104 cases reported from 1907 to 1924, and a complete bibliography covering the same years. The complete article appears in the Transactions of the Section and in the authors' reprints.

* Synonyms: isolated disease of the scaphoid (Moffat); traumatic alteration of bones of tarsus (Preisser); la scaphoidité tarsienne (Mouchet); osteochondropatia juvenilis parosteogenetica navicularis pedis (Zaaijer); tarsal scaphoiditis in children (Comby); le syndrome scaphoidien (Olindo).

spasm, but no other signs of acute osteomyelitis or tuberculosis. Examination of the right foot showed a similar condition so slightly developed that the boy had not noticed it. Roentgen-ray examination revealed the condition shown in the accompanying illustrations. The scaphoid bony nucleus was reduced markedly in all diameters, and had a ragged appearance and increased density.

The boy's feet were strapped, and he was instructed to keep off them as much as possible. At the end of two weeks, he was no better, and had developed pain lasting some time after

Fig. 2.—Condition of scaphoid, Jan. 14, 1924.

he got to bed at night. The family was most anxious to have some radical cure. It was therefore decided to excise a portion of the left scaphoid in order to make a positive diagnosis. This was done, Jan. 21, 1924. Through a short dorsal incision, a wedge shaped piece of cartilage and bony nucleus, extending from the periphery to the center and including the whole anteroposterior diameter, was excised. This wound was closed, and both feet were put up in plaster in varus and cavus. The wound healed normally, and three weeks later the plasters were removed. Physicotherapy was instituted, and the boy gradually recovered completely.

At present, all clinical signs have disappeared. The boy is in school, and walks, runs and plays normally. The roentgen-ray examination shows a marked increase in size of the nucleus of the scaphoid, which is normal in shape.

A microscopic examination of the specimen removed was made by Dr. P. F. Morse, pathologist to Harper Hospital, Detroit, who reported that the specimen consisted of a fragment of rather cellular cartilage. In the center of this fragment were two distinct centers of ossification, separated from each other by a trabecula of cartilage. The ossification centers consisted of osteoid septums of fibrous tissue and cartilage, with normal marrow tissue in the interstices. There was imperfect deposition of lime salts throughout, the process being osteoid rather than truly bone forming.

COMMENT

Such a report describes bone in which there has been interference with normal development. This interference might be due to congenital defect, to lack of blood supply or to infection. Ordinarily, such interference is due to a combination of lack of blood supply and infection. A similar condition is seen in Legg-Perthes' disease.

The history of our knowledge of this condition is, briefly, as follows: In 1908, Köhler of Wiesbaden published an article descriptive of a "previously unknown condition of certain bones in children." He described three cases, and assigned the cause to an anomaly in development of the bone. In 1914, he added that it might be due to a disturbance of general development of the skeleton, due to lack of activity of internal glandular secretion. The year before this, 1907, Thomas Dwight published a book on the "Anatomical Variation of the Bones of the Hand and the Foot," in which appears a description and roentgenogram of a child 4 years old in whom there was an extra bone that could be explained only by a division of the nucleus of the internal cuneiform. This roentgenogram is typical of the condition described by Köhler. Since then, many authors have described the condition, but it is either rare or else it passes unnoticed frequently, because although Köhler collected reports of thirty-five cases in 1908, Caffier was able to find only fifty-four in 1923, and we have been able to find only fifty more. All the cases are listed in the accompanying table.

An analysis of all the cases makes clear the following facts:

INCIDENCE

The condition is most common between the ages of 5 and 8. The youngest patient was 4 years (Dwight), and the oldest 10 (Backman). It is more common in boys than in girls. Most of the cases were unilateral, but there were seven, including our own, which were bilateral. This rarity of bilateral lesions may be explained by the fact that, because symptoms were referred to only one foot, as in our case, the other foot was not roentgenographed. There seems to be no preference for the right or left foot.

ETIOLOGIC FACTORS

Trauma is noted in the history of only one third of the cases. It is possible, as pointed out by Greenwood,[1] that a traumatic background might be obtained in all cases if the matter were sufficiently gone into. On the other hand, it would be hard to find any normal, active child from whom a history of foot trauma could not be

Fig. 3.—Condition, Jan. 14, 1924, anteroposterior position.

elicited. It seems probable, therefore, that specific single trauma has little to do with it. We have not sufficient data on the conformation of the feet, in the reported cases, to be able to judge whether or not the constant trauma of foot strain should be considered as a causative factor.

1. Greenwood, H. H.: Lancet 2:274 (Aug. 11) 1923.

Inheritance seems to have nothing to do with the condition, as the parents and families in most cases were free from the stigmas of syphilis, tuberculosis or rickets, and had no signs of similar trouble or of other bone changes. Two instances of the condition occurring in brothers are mentioned by Rotch and Roederer.

Fig. 4.—Condition two months later.

Previous disease, such as rickets, tuberculosis, acute infections or syphilis, seems to have no bearing. As in other disturbances at the epiphyses, such as Schlatter's disease of the tibial tubercle, Legg-Perthes' disease of the head of the femur, and slipping epiphysis of the upper end of the femur, disturbances of the function of the hypophysial, thyroid or thymus glands may be an etiologic factor. This factor in all disturbances of bone growth and nutrition is still so little understood that much more study of its influence is essential. We think there can be no doubt that it is of great importance in the causation of the coxa vara due to slipping epiphysis of the upper end of the femur, as shown in a paper by one of us, as yet unpublished.

SYMPTOMATOLOGY

Pain on walking is an almost constant symptom. It is located in the inner side of the tarsus, and forces the foot into varus. Pain usually persists for a longer or shorter period after the foot is put at rest, and sometimes occurs at night. Tenderness over the scaphoid is constant. Swelling due to an infiltration of the soft parts is moderate, but nearly constant. Occasionally there is redness, heat and dilatation of superificial veins. Extreme motions, active or passive, of the tarsus are often limited by pain.

ROENTGEN-RAY APPEARANCES

The bony nucleus of the scaphoid appears denser than normal. It is decreased in all diameters. It is ragged in outline. The anteroposterior diameter seems to be shortened more than the side to side diameter. This is probably not a fact. It is an illusion originating in the great disproportion between the two diameters normally, the lateral being much greater than the anteroposterior. If then the bony nucleus contracts symmetrically in all directions, it will appear as though the shorter diameter had decreased more than the longer. There is moderate swelling and thickening of the soft parts visible. The surrounding bones all throw normal shadows. There is no notable calcium absorption. The increased density of the scaphoid nucleus is apparently due to a decrease in size of the canaliculi, with consequent shrinking or compression of the lime-containing bone elements. This makes the mass more compact, and therefore more resistant to the roentgen ray. The density does not seem to be due to actual increase in the amount of calcium salts. Sometimes there is a tendency to fragmentation of the nucleus, but it never breaks up into separate elements. We believe the cases cited by Bartolini in which there are three or more separate ossification centers are not examples of this condition at all, but are anomalies in the laying down of the centers of ossification. The statement of Mouchet that in the diagnosis of this condition "the clinical examination is of little importance and the roentgen-ray findings are of great importance" is true.

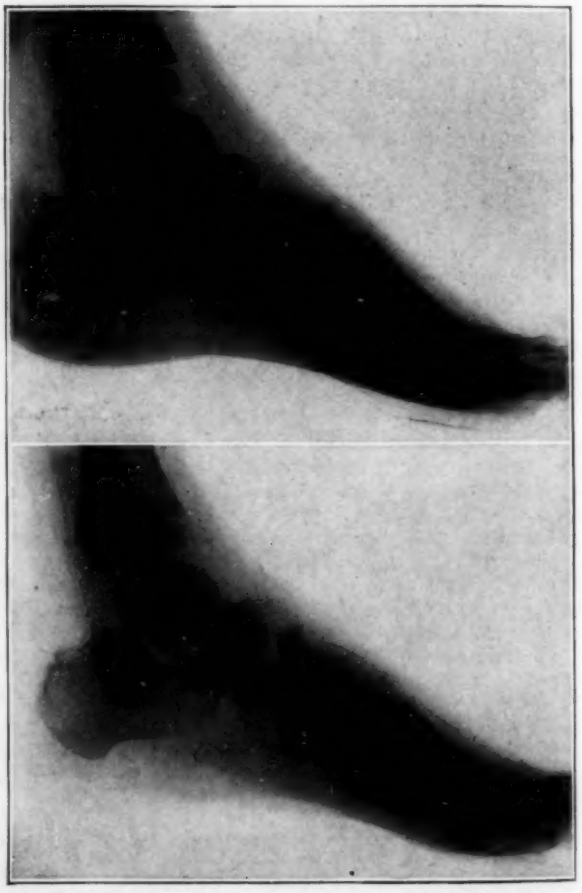

Fig. 5.—Five months later: Both scaphoids increased in size and with normal shape.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis is of great importance. Mistakes in diagnosis may easily lead to grave errors in treatment. We must distinguish it from simple trauma, foot strain, early tuberculosis, acute or subacute osteomyelitis, syphilis or an arthritis.

From simple trauma, it differs clearly in its failure to get well promptly.

From foot strain, we can distinguish it by the sharp localization of the pain, by the local tenderness on the dorsum of the foot, and by the fact that pain is apt to persist after weight bearing ceases.

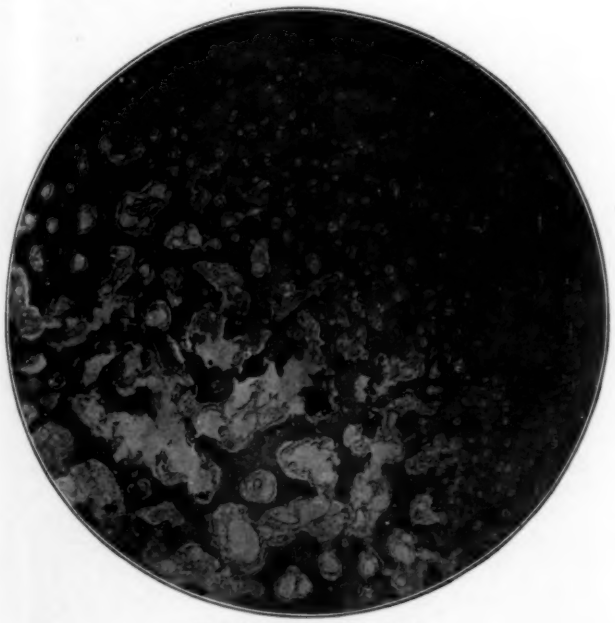

Fig. 6.—Section of lesion.

From early tuberculosis, the diagnosis is not so easy. There are many points in common: the gradual onset, the mild pain, the tenderness and the slight swelling. We believe, however, that the failure to spread to other bones, the tendency to get well without disability, and the lack of general constitutional changes are enough to distinguish the two conditions. Then the roentgen-ray picture is wholly different. Tuberculosis essentially produces calcium absorption and bone destruction. This condition shows no absorption and no destruction. In fact, the bone is denser than normal. It is then, we think, safe to say, in spite of the evidence adduced by Greenwood quoted above, that the condition is not tuberculous.

From acute osteomyelitis of pyogenic origin, we can easily differentiate because the symptoms and signs are never severe, and there is no constitutional reaction. From a subacute or chronic low grade osteomyelitis, we believe that the differential diagnosis is not possible, and we shall consider this further under our discussion of the causation of the condition.

From syphilis, it is easily distinguished by the absence of the Wassermann reaction, or other stigmas of syphilis.

From an arthritis, we can distinguish it by the fact that it localizes in one place in one or both feet, that it involves bone structure rather than joints, and that motion is little interfered with.

To explain os naviculare pedis retardatum and its cause, many theories have been advanced; viz., abnormal center of ossification (Dwight, 1907); trauma with resulting delay in ossification (Hoenisch, 1908); compression fracture (Stumme, 1910; Wrede, 1912); traumatic interference with circulation (Preisser, 1911; Caffier, 1923); defect in mechanism of bone development (Wohlauer, 1913); mild tuberculosis (Fassett, 1914); nutritional disturbance (Koritzensky, 1919); anemic necrosis (Behn, 1921), and mild osteomyelitis (Lucene and Mouchet, 1924).

Only two of these theories have been confirmed by microscopic examination: the first by Behn, in 1921, who found a necrosis probably due to anemia which he was unable to explain; the second by Lucene and Mouchet, who removed the scaphoids and found a central inflammatory area with vascular and fibrous surrounding medullary tissue which they believed to be excited by a local infection.

We now come to the cause of the lesion. It unquestionably resembles Legg-Perthes' disease of the hip in its symptoms and roentgenographic appearances. The cause of Legg-Perthes' disease is still under discussion. Legg believes that it is due to traumatic anemia. Perthes believes that it is a dystrophy. Phemister, Freiberg and one of us (F. C. K.) believe that it is a low grade infection of an epiphysis, perhaps damaged by insignificant trauma. Jansen believes that it is a reaction to pressure in a bone architecturally weak through bad inheritance; that is, to "feebleness of bone." Phemister and one of us (F. C. K.) have adduced positive evidence of infection, but have failed to get control cases.

It is unquestioned that the scaphoid bone of the foot is the bone under the greatest strain in the foot, and that its blood supply is the poorest (Balli), and that it therein resembles the upper epiphysis of the femur.

It is unquestioned that certain tissues are especially susceptible to specific low grade infection. Rosenow's experiments, in which he produced torticollis in monkeys with bacteria isolated from the tonsils of patients suffering from torticollis, prove this.

After careful consideration of all the evidence adduced from the literature, from the examination of the cases and from the few pathologic examinations, we are forced to believe that os naviculare pedis retardatum, or Köhler's disease, is an interference with the power of bone production in the scaphoid of the foot.

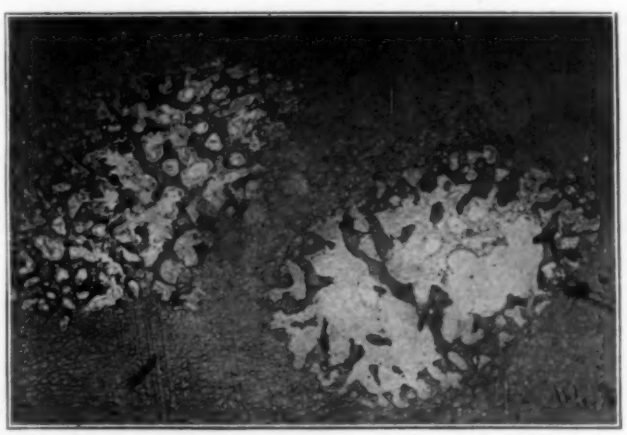

Fig. 7.—Section of lesion.

This interference is due to low grade infection, the source of which is unknown. This infection attacks the scaphoid for two reasons:

1. Because the scaphoid is the bone in the arch of the foot which bears the greatest strain.

2. Because it has the poorest blood supply of any of the bones of the tarsus. Trauma undoubtedly has an influence in making the scaphoid susceptible to the infection.

Clinically, the symptoms and signs are all those of a low grade infection. In the previous pathologic examinations, the picture has been that of infectious irritation. In our own case, the picture is not incompatible with infection.

The infection is so mild that ordinarily it is overcome by the resistance of the body, and development goes on with an approach to the normal. We believe that this is true in Legg-Perthes' and Schlatter's disease.

We believe that treatment of this condition is of the greatest importance, because it is necessary to protect the damaged nucleus from strain and crushing, in order that flatfoot or weak foot may be avoided in later life. The treatment should correspond with that advised by one of us for Legg-Perthes' disease, and for slipping epiphysis of the femur—long continued rest. This rest should be in plaster of Paris with the foot in strong overcorrection in varus and cavus. It should be continued for from two to three months.

1337 David Whitney Building.

ABSTRACT OF DISCUSSION

DR. PHILIP LEWIN, Chicago: In the paper by Dr. Moffatt, written in 1923, there were only forty-two cases recorded. Dr. Muro, working with Dr. Kidner, was able to collect reports of 120 cases from the literature. It is interesting in this connection to know that Dwight described this condition in the tarsal scaphoid before it was described by the man whose name we attach to it. I do not feel that I know much about scaphoiditis, but I have had more experience with a condition which I believe is very similar. This condition occurs in the second or third metatarsal head. It was described first in 1914 by Freiberg as "infraction of the metatarsal head." One year later, Köhler of Wiesbaden described the same condition as the metatarsophalangeal syndrome. There are those who believe that these conditions are due to trauma; others to circulatory disturbances; others that it is due to infection, toxins, and still others who believe the cause is in the endocrine system. Some investigators have found sequestrums in the metatarsal head, and Lecene and Mouchet in France removed the entire scaphoid—which, by the way, is to be condemned—and found evidence of an attenuated osteomyelitis, although no organization has yet been cultivated. I was interested in Dr. Kidner's statement that his case showed a varus position of the foot, which is in contradistinction to what Moffatt found. In a varus position, there would necessarily be a tendency for compression of the scaphoid between the first cuneiform and the astragalus. I believe this is a condition analogous to several definite entities which we know, namely, Legg-Calve-Perthes' disease, Osgood-Schlatter's disease, calcaneal apophysitis, Scheuermann's vertebral epiphysitis, and Freiberg's infraction of the metatarsal head, or juvenile deforming metatarsophalangeal osteochondritis.

DR. CHARLES LEROY LOWMAN, Los Angeles: The fact that this condition was noticeable at 7 or 8 years leads me to suggest that we be particularly careful about radical treatment without studying growth and comparing the opposite foot. We have been using roentgen-ray examination for clubfoot for a long time and have found many with growth deviations in the tarsal scaphoid. Remember, that the scaphoid does not show in a roentgenogram of a normal foot until 3½ to 4 years and is not supposed to reach its mature shape until about the seventh year. If there is actual retardation in the epiphysis, from delayed ossification, there may be apparently a very small scaphoid, and if the roentgen-ray shows apparent increased density one may be apt to misinterpret it. One may have the typical osteites in this condition occurring with either a varus or a valgus position. In the former, the backward and outward thrust from the toe in position may compress the scaphoid, and a spasm of the tibials would increase this action, whereas, in a relaxed valgus type of foot, a direct weight bearing thrust through the astragalus would also influence it similarly. Undoubtedly, we have a nutritional condition to consider, particularly along the endocrine line.

DR. FREDERICK C. KIDNER, Detroit: This paper was written to call attention to the importance of one of the various conditions in which there is improper development in the epiphyses. It seems to me that their real importance lies in their tendency to cause deformities. The scaphoid condition is apt to produce flatfoot if not properly treated. We have not been treating these cases thoroughly enough by fixation and protection. I think the question of varus or valgus depends on the individual architecture of the foot. In one case, it might pinch the scaphoid to walk in varus and in another to walk in valgus. The keynote of treatment is prolonged fixation in the corrected position.

EXPERIMENTS ON WHOLE SPLEEN TRANSPLANTATION *

THEODOR KOPPÁNYI, PH.D.
CHICAGO

Successful transplantation of the whole spleen of the urodele (*Triton cristatus*) was reported last year by Ehrenpreis.[1] About the same time I was able to achieve the same results on albino rats. Schönbauer and Sternberg [2] have just published an article in which they mention previous work and some original work of their own as a result of which they deny the possibility of spleen transplantation.

Ehrhardt published in a dissertation (which is not available to me) that he had done successful spleen transplantation in 1909. Lüdke [3] stated that he could transplant fragments of rabbit spleen into the spleen of the monkey and could identify them microscopically from four to eight weeks later but not after three months. Stubenrauch,[4] in 1912, found that spleen fragments transplanted into the omentum could be found after eight weeks and these presented the histologic characteristics of normal spleen. Soper,[5] in 1916, did twelve homotransplants and six autotransplants in guinea-pigs and found that they completely disappeared. Marine and Manley [6] have removed the spleen and autotransplanted it in forty-nine rabbits. They introduced a small fragment of spleen, roughly from 2 to 3 mm. in diameter, beneath the subcutaneous fascia of the abdomen. All except three grafts grew. The histologic examination showed regeneration of the major splenic elements into normal looking, encapsulated, highly vascular little spleens.

Kreuter,[7] in 1920, removed part of the spleen pulp of the rhesus monkey and introduced it in small fragments into the abdominal cavity. After two and a half, and seven and a half months, respectively, he found small brownish nodes attached to the serosa of the peritoneal surface. These presented the histologic appearance of normal spleen substance. Schönbauer and Sternberg did total splenectomy in two young dogs. Two small pieces of the spleen were returned to the abdominal cavity. One animal was examined at necropsy two months later, and the other four and a

* From the Hull Physiological Laboratory of the University of Chicago and the Biologische Versuchsanstalt der Akademie der Wissenschaften in Vienna.

1. Ehrenpreis, A.: Arch. f. mikr. Anat. u. Entwcklngsmechn. **102**: 573, 1924.
2. Schönbauer, L., and Sternberg, H.: Wien. klin. Wchnschr. **37**: 667, 1924.
3. Lüdke: München. med. Wchnschr. **29-30**: 1909.
4. Stubenrauch: Beitr. z. klin. Chir. (Bruns') **120**, 1912.
5. Soper: Ztschr. f. exper. Path. u. Therap. **16**, 1914.
6. Marine, D., and Manley, O. T.: Proc. Soc. Exper. Biol. & Med. **14**: 123, 1917.
7. Kreuter, E.: Beitr. z. klin. Chir. (Bruns') **118**, 1920.

half months later. Schönbauer and Sternberg were impressed with the large number of adhesions between the omentum and the intestine. Near these adhesions were found large "tumors." Within these masses, histologic examination revealed very small areas of splenic tissue undergoing degeneration. The splenic vessels were in stages of hyaloid degeneration, which in the later stages occupied the entire nodule.

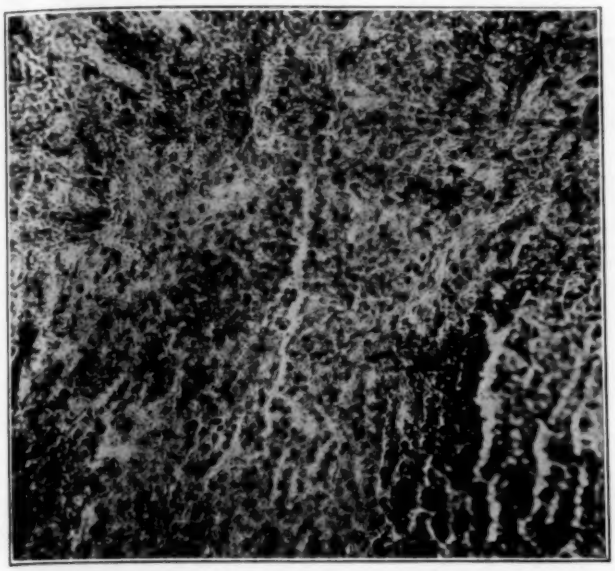

Fig. 1.—Major splenic elements, five months after the transplantation.

Schönbauer and Sternberg would have us believe that the spleen cannot be successfully transplanted in mammals. But such a view is untenable in view of the work of Marine and Manley on mammals, and of Ehrenpreis on newts. Ehrenpreis did homoplastic transplants of the entire spleen into the abdominal cavity of the newt (*Triton cristatus*). After four months he found the entire spleen still present undiminished in size and presenting the microscopic picture of normal spleen even to the mitosis of the splenic cells.

In an effort to see whether such successful transplantation of the entire spleen could also be done in mammals, I made the following experiments on albino rats: Murphy transplanted malignant tumors into the chorio-allantois membrane of the chick with and without grafting the spleen at the same time. He found that the transplantation was successful in the absence of spleen, whereas it was unsuccessful in its presence. Driesch states that successful transplantation of organs in the rat is possible only after the removal of the spleen of the host. I have been successful in transplantation of the eye in rats without the removal of the spleen. It seemed advisable, therefore, to put the theory to a crucial test by transplanting the entire spleen of one rat into another whose spleen was present. A second change of technic from that used by most previous investigators was to use the entire spleen. In my previous work I found that successful transplantation of the testis and of the eye was possible, using the entire organ. These organs each having a firm fibrous capsule, it was thought that they are thus protected from the destruction wrought by wandering cells; that the section of an organ made easy their entrance and thus invited destruction. The spleen also having a fibrous capsule, it was hoped to obtain the same advantage by transplanting the entire organ. Two albino rats were anesthetized with ether. The spleen of the donor was isolated from its connections. A small slit was made through the abdominal wall of the host and the donor's spleen carefully introduced, every effort being made to minimize the trauma. The incision was closed with skin clamps. Seven transplants were thus made. After five months, necropsy revealed the absence of the transplanted spleen in three rats; in two, the transplanted spleen was present but somewhat shrunken; in the remaining two, the transplanted spleen presented the macroscopic appearance of normal spleen.

Histologic preparations were made by Dr. M. Kolliner in Kolmer's laboratory. The histologic examination was done by Dr. Robert K. S. Lim. The transplanted splenic tissue differed (according to Dr. Lim) from normal spleen in the following respects: 1. There was profuse proliferation of the lymphatic tissue cells in the pulp as evidenced, for instance, by widespread mitosis. Blood sinuses were filled with proliferated reticular cells, and in the same region we find certain amounts of old blood pigment. This suggests that the spleen had undergone degenerative changes as a result of anemia, and after the ingrowth of blood vessels, regenerative processes took place. 2. In the two larger spleens the blood vessels were normal in distribution, while in the two smaller specimens the blood vessels were far fewer and large lymphatic channels ran through their substance. As such large lymphatic channels are not present in normal spleen and as the blood vessels were greatly reduced in size and distribution, it is suggested that in the two instances in which the spleens were smaller in size that they were becoming altered into lymphatic nodes. 3. Surrounding the entrance into the spleen of these large lymphatic channels, a small amount of lymphoid tissue had proliferated. 4. The malphigian corpuscles were sometimes increased in number and sometimes decreased.

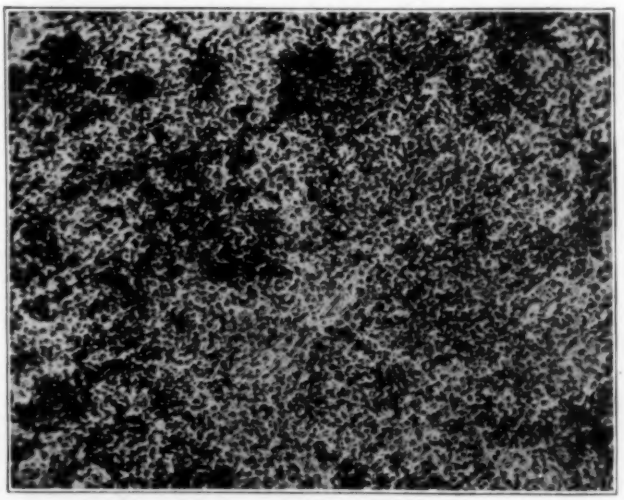

Fig. 2.—Major splenic elements, large magnification, five months after the transplantation.

The spleen of the host was normal macroscopically and microscopically, contrary to the results of Danchakoff,[8] who found degenerative changes in the spleen of the chick after implantation of splenic substance into the chorio-allantois membrane.

Thus it is certain that the entire spleen can be transplanted, at least in certain urodeles and mammals. The

8. Danchakoff, V.: Am. J. Anat. **24**: 127 (July) 1918.

method is suggested as suitable for the investigation of problems in which an increase in spleen substance may be desirable, as in hematopoiesis and resistance to malignant tumors

THE FEMALE BLADDER*

WILLIAM E. STEVENS, M.D.
AND
ELIZABETH ARTHURS, M.D.
SAN FRANCISCO

Almost every woman suffers from bladder disturbances at some period of her existence. Frequency of urination, for instance, is so common that, unless accompanied by marked pain or discomfort, it is often considered of no importance and promptly forgotten by the patient. While this organ is seldom primarily involved by pathologic processes other than tumors, ulcers and congenital diverticula, it is affected either directly or indirectly by almost every pathologic condition of the urinary tract.

Fig. 1.—Distortion of bladder from pressure during pregnancy; cystogram taken before voiding.

In a clinical study of the female bladder, there are several significant factors to be taken into consideration, which have a direct bearing on the etiology, symptomatology and treatment and are likewise responsible for the increased frequency of bladder disturbances in this sex. These factors in the order of their importance are, first, the physiologic functions, particularly pregnancy, childbirth and menstruation; second, the anatomic differences, especially those of relationship, size and structure, and third, the increased sensitiveness of the female bladder to direct and reflex influences.

In Radeaux's [1] series of 124 pregnant women, sixty-three had bladder symptoms at some time during the nine months, twenty-six of the sixty-three having had symptoms during the first trimester. Without definite statistics, we have gained the impression that bladder disturbances occur during pregnancy in a much larger percentage of cases. The opinion is generally accepted that during the first three months of gestation, while the uterus is in the pelvis, pressure or traction on the bladder, together with the congestion produced by these conditions as well as that involving all the pelvic organs during this period, are responsible for bladder disturbances. Later, retraction of the ureteral orifices and traction on the bladder wall, in addition to pressure and congestion, are important etiologic factors. Cystoscopy at this time always reveals more or less injection of the bladder mucosa and wide separation of the ureteral orifices. After the first trimester the frequency of urination is, in the absence of kidney involvement, considered by many to be largely due to residual urine and the accompanying infection. One of the facts elicited following the study of 102 pregnant women in the Department of Obstetrics, Gynecology and Urology in Women at the Stanford University Medical School was that residual urine is present during pregnancy in but one third of these cases. The same proportion of infections, 33⅓ per cent., was found in patients, with, as in those without, residual urine. From these observations, the conclusion is drawn that the latter condition is not the most important etiologic factor in the production of bladder symptoms during pregnancy. We believe that pressure on and congestion of the bladder wall are of greater significance. The marked distortion of the bladder caused by pressure of the enlarged uterus is illustrated in the accompanying cystograms (Figs. 1, 2, 3 and 4). It has also been asserted that regurgitation of urine is frequent during the second and third trimesters; but in a series of sixty-five cystograms taken during pregnancy we found no evidence of regurgitation in any case. It is important to remember, however, that ureteral regurgitation may occur at one time and not at another. In a case recently under observation, no ureteral reflux was found on cystography, whereas three days previously bilateral regurgitation occurred during this procedure. This particular case was also interesting because of a leukoplakia in which numerous methods of treatment, including cystotomy, had been tried. Notwithstanding Wassermann examinations that were repeatedly negative, marked improvement followed antisyphilitic treatment.

Unfortunately, there is a tendency to ascribe all vesical disturbances occurring during pregnancy to this physiologic function. Needless to say, nothing should be taken for granted in urologic diagnosis. Often the correction of a minor condition, such as a highly acid urine or a urethral stricture, will relieve the patient of much discomfort.

Pyelitis is a much more frequent cause of bladder disturbances in the female than is generally appreciated. It unquestionably ranks second to urethritis and trigonitis in the production of vesical symptoms in this sex. A low grade infection of the kidney pelves often exists during pregnancy, as well as at other times, in the absence of positive bladder findings and without subjective symptoms other than frequency of urination, and occasionally without any subjective symptoms referable to the genito-urinary tract. In this connection, however, we should not lose sight of the fact that, because it is so common, frequency of urination is often considered of no importance by the patient, and only under direct questioning is this symptom elicited; and often having been forgotten, its previous existence is denied.

* From Stanford University Medical School.
* Read before the Section on Urology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.
1. Radeaux: Arch. gén. de méd. 2: 1873-1883, 1905.

During labor the bladder and the tissues surrounding the urethra are more or less traumatized and there is probably a reflex nerve disturbance as a result of one or both of these factors. These conditions, together with the recumbent position and lowered intra-abdominal pressure, usually result in retention of urine

Fig. 2.—Same case as Figure 1: cystogram of bladder taken after voiding; residual urine present.

immediately after childbirth. Later, when the detrusor muscle has, in a measure, regained its tone, frequent urination due to residual urine and infection is often present. Following catheterization two days after delivery, we found residual urine in twenty-nine of thirty-six cases. In the presence of cystocele, which unfortunately so often follows pregnancy, residual urine and infection are apt to persist indefinitely; otherwise, in the absence of obstruction or of infection above or below the level of the bladder, it usually disappears in a relatively short time. Contrary to assertions occasionally appearing in the literature, cystoceles are frequently seen unaccompanied by residual urine or infection. Neither of the latter complications was found in one half of our cystocele cases, and under these circumstances bladder symptoms are the exception rather than the rule. Cystocele operations for the relief of bladder disturbances, the etiologic factors of which are in some other part of the genito-urinary tract, are altogether too frequent. Instances are on record, however, in which the bladder has never completely regained its tone after labor or operation, and the importance of daily catheterization as long as residual urine is present cannot be overemphasized. Steuernagel [2] found that, from twenty-four to forty-eight hours after labor, the bladder capacity is increased to 2,000 c.c. A residual urine of 1,020 c.c. was found in one of our cases immediately after 720 c.c. had been voided.

Following operations on the female pelvic organs, partial or complete retention of urine, due to reflex nerve disturbances and the recumbent position, is always present. Residual urine was found in every postoperative case studied in the gynecologic department of the Stanford University Medical School. Curtis [3] states that residual urine was present after the return of spontaneous micturition in over 64 per cent. of his repeatedly catheterized patients who had been subjected to major operations. Hill [4] found colon bacillus infection in the bladder urine following appendectomies in 34 per cent. of his cases, the urine prior to operation being culturally negative. We believe, with Taussig,[5] Curtis [3] and others, that residual urine is more often responsible for the infection than catheterization, and consequently that no contraindication exists to the latter procedure in postoperative as well as in postpartum cases. In fact, daily catheterization of the bladder until residual urine is no longer present will usually prevent cystitis and pyelitis.

During labor, some fibers of the bladder sphincter are very frequently torn, and the partial incontinence so often seen in women during coughing, crying, laughing or sneezing is usually due to this occurrence.

MENSTRUATION

Menstruation, per se, is not responsible for bladder disturbances; but, in the presence of other conditions, not in themselves sufficient to produce symptoms, the congestion of all the pelvic organs incident to this physiologic function may be the deciding factor.

ANATOMIC DIFFERENCES

Anatomic differences rank second in importance to those of the physiologic functions, as factors in the increased frequency of urinary disturbances in women. The shortness of the female urethra and its proximity to the vagina and rectum explain to a large extent the increased frequency of lower urinary tract infections

Fig. 3.—Distortion of bladder from pressure during pregnancy; cystogram taken three hours after the administration by mouth of 60 grains (4 gm.) of sodium iodid.

in this sex. These anatomic features are very often indirectly responsible for the constant reinfection of

2. Steuernagel, A. H.: Ztschr. f. gynäk. Urol. **3**: 295-297, 1911.

3. Curtis, A. H.: Stasis of Vesical Urine, in Relation to Urinary Tract Infections, J. A. M. A. **66**: 1456 (May 6) 1916.

4. Hill, C. A.: Obstruction of the Ureter, the Most Frequent Predisposing Cause of the Localization of Bacteria in the Pelvis of the Kidney, Am. J. Surg. **36**: 289 (Dec.) 1922.

5. Taussig, F. J.: Bladder Function After Confinement and After Gynecological Operations, Surg., Gynec. & Obst. **21**: 416-422, 1915.

the bladder, which, in the presence of cystocele with residual urine, urethral obstruction or other primary conditions, occurs so frequently in the presence of vulvovaginal discharge, due to infections of the female generative organs. In this connection, we believe that these anatomic features are not given the consideration they deserve as etiologic factors in lesions of the bladder and upper urinary tract. Many dispute the theory of ascending infection. Its occurrence, however, during the course of gonorrhea is seldom denied, and we have frequently seen repeated infections of the bladder and kidneys disappear when pathologic conditions of the tubes, vagina, cervix or glands of Bartholin had been eradicated. Obviously, both tracts should receive attention in the presence of these intermittent infections. Urethritis, trigonitis and other urethral lesions are much more often responsible for bladder disturbances in the female than in the male; consequently, a careful urethroscopic examination should invariably be made.

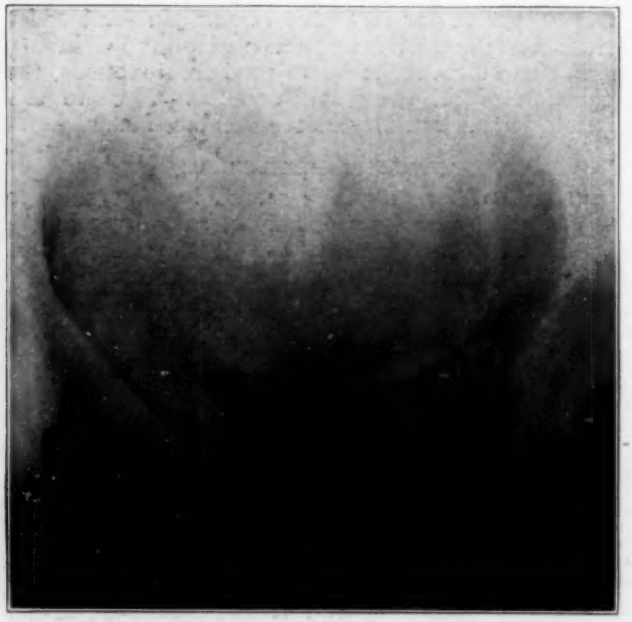

Fig. 4.—Same case as Figure 3: cystogram taken after voiding.

The proximity of the bladder to the female pelvic organs, which are so often the site of inflammatory processes and new growths, is of considerable importance, although we believe that this factor has been overestimated. Stark [6] found, in a series of gynecologic cases, that 35 per cent. complained of bladder irritation. Furniss [7] stated that 30 per cent. of his gynecologic patients suffered from this condition. In a study of 200 nonpregnant women with urinary disturbances, we found that the symptoms were entirely due to urinary tract conditions in 73 per cent., whereas lesions of the generative organs, although present in a large proportion of cases, were probable etiologic factors in only 27 per cent. These correspond with the figures of Bugbee,[8] who, in a series of 1,000 cases of frequency of urination, the most common bladder symptom of which women complain, found the etiologic factor in the generative organs in contradistinction to the urinary tract in but 24 per cent.

The accessibility of the bladder to vaginal palpation is of great assistance at times in the diagnosis of inflammatory conditions of the bladder wall, tumors and foreign bodies. The treatment of bladder lesions is likewise facilitated. Direct applications through the endoscope and prolonged hot vaginal douches are valuable therapeutic measures in trigonitis. The insertion of radium through the vaginal wall into bladder tumors is feasible, and forceps and other instruments may be introduced alongside the cystoscope.

SENSITIVENESS OF THE FEMALE BLADDER

The female bladder is more susceptible to direct and reflex influences than that of the male. Cases are seen repeatedly in which no cause, other than highly acid urine or a caruncle, can be detected. Urethritis is much more often responsible for frequent urination in the female than in the male. This is largely due to the frequency with which the trigon is involved in infections of the female urethra. The two glass test should be more often used in differential diagnosis of bladder and urethral conditions in women. If preceded by a vaginal douche and cleansing of the external genitals, it is of value as great as, if not greater than, in the male, and, in infection limited to the urethra, rules out bladder involvement. The examination of stained smears of the urinary sediment for bacteria, in addition to cultural and microscopic examination of the urine, is likewise advisable.

Two very frequent causes of reflex bladder disturbances in women, and at the same time the ones that are the most often overlooked, are urethral stricture and sagging of the posterior urethral wall. It is only within the last few years that urethral strictures, formerly regarded as uncommon, have been recognized as an important factor in these conditions. Urethritis, trigonitis or both conditions were present in 83 per cent. of our urethral stricture cases. Hunner [9] and others call attention to the frequency with which ureteral strictures are responsible for bladder disturbances in women. In our experience, urethral stricture has been a somewhat more common factor. Calibration of a series of 152 urethras in patients complaining of frequent urination revealed a stricture in sixty-seven, or 43.5 per cent. Abnormally small meatuses were classified as strictures in this series of cases. Although more common at the meatus than in the lumen of the canal, strictures at the former location are productive of symptoms that respond immediately to appropriate treatment. Dilation of the meatus of the female urethra is a much more satisfactory procedure than dilation of the meatus of the male urethra. Ureteral strictures were present in 29.7 per cent. of our series. The following cases are interesting in this connection:

CASE 1.—The wife of a physician had complained of frequent urination, at times accompanied by pain, in the hypogastric and lumbar regions for the past four years. Examination was negative except for a tight urethral stricture 1 cm. from the meatus. A filiform followed by a Le Fort metal catheter was passed with some difficulty, and the urethra dilated. Marked improvement followed this procedure. All symptoms disappeared after the second treatment.

CASE 2.—Another patient complained of hematuria in addition to the foregoing symptoms. Two polyps, as well as a tight stricture, were found in the urethra. The polyps were destroyed by fulguration, and the urethral stricture was

6. Stark, G. W.: Irritable Bladder in Women, New York State J. M. **17**: 549 (Dec.) 1917.
7. Furniss, H. D.: Renal and Ureteral Conditions in Women, Am. J. Surg. **31**: 257 (Oct.) 1917.
8. Bugbee, H. G.: Frequency of Urination in Women, J. A. M. A. **68**: 693 (March 3) 1917.
9. Hunner, G. L.: Intractable Bladder Symptoms Due to Ureteritis, J. Urology **4**: 503 (Dec.) 1920.

treated in the manner outlined in the previous case. Immediate relief was obtained.

Sagging of the posterior urethral wall as a cause of bladder irritation is probably more often overlooked than any other pathologic condition of the female genito-urinary tract. It occurs at times independent of cystocele, and is usually due to obstruction at the meatus or to injury during childbirth. The following case is typical of a number of cases that we have seen in both single and married women.

CASE 3.—A married woman, aged 45, complained of slight frequency of urination and dribbling. These symptoms had been present since a miscarriage eighteen years before, at the eighth month of pregnancy. Thorough clinical examination was negative, with the exception of the sagging of the posterior wall. The condition was diagnosed by inspection and introduction of a curved sound with the beak downward. In this position the instrument could not be inserted farther than the neck of the bladder, whereas with the beak upward it readily entered. The symptoms disappeared after elevation of the posterior wall of the urethra.

The more common primary pathologic conditions of the female bladder are tumors, diverticula (Fig. 6), ulcers and foreign bodies.

Both cystitis and trigonitis are more often associated with bladder disturbances, but these are symptoms rather than separate entities, and are almost always secondary to infection of the upper or lower urinary tracts. Although attention has been repeatedly called to the fact that cystitis is merely a symptom secondary to some other pathologic condition in the genito-urinary tract, the urologist continues to see women and female children whose bladders have been futilely irrigated for weeks or months because of this snapshot diagnosis. In a study of 102 patients with cystitis or trigonitis, the principal etiologic factor or factors were found above the bladder in fifty-five, below the bladder in thirty-seven, both above and below in six, confined to the bladder in three, and outside the urinary tract in one. In thirty-nine patients with bladder disturbances in which cystitis and trigonitis were absent, the principal etiologic factor or factors were found above the bladder in thirty-two, below the bladder in forty-nine, both above and below in ten, confined to the bladder in one, and outside the urinary tract in seven.

Kidney, ureteral and urethral conditions are often responsible for bladder irritation in the absence of demonstrable involvement of this organ. Nephroptosis is much more common in the female, and the stasis resulting from a kinking of the ureter when its upper portion is fixed is often a factor in the greater frequency of pyelitis and frequency of urination in this sex. Like stricture of the ureter, this condition is sometimes overlooked. In this connection, I would emphasize the importance of repeated examinations of the upper urinary tract whenever visible bladder or urethral lesions are absent or apparently are not sufficient to account for the symptoms, or when treatment fails to cure the patient.

Occasional extravesical causes of bladder disturbances, exclusive of urinary tract disease and pregnancy, are pelvic inflammatory processes, such as cellulitis, salpingitis and parametritis, appendicitis, pericystitis, peritonitis and their sequelae, carcinoma and other pathologic conditions of the cervix, large growths of the other pelvic organs, and inflammatory exudates.

Pelvic inflammatory processes affect the bladder reflexly and involve the organ by direct extension or later by the formation of adhesions. Growths of the adnexa occasionally involve the bladder walls or exert pressure on them (Fig. 5). Notwithstanding the frequency of bladder disturbances accompanying pathologic conditions of the pelvis, we believe that the latter conditions are given undue credit for these symptoms. Marked displacement of the uterus, pelvic tumors and inflammatory conditions and cystoceles are very often unaccompanied by vesical disturbances. At other times, the concurrent bladder symptoms are due solely to an independent pathologic condition of the genito-urinary tract. Cases 4 and 5 serve to illustrate this point.

CASE 4.—A patient complained of frequent urination and pain in the hypogastric, both lumbar and the perineal regions. Two months before coming under our observation, the kidney pelves had been irrigated for a period of nine weeks because of a bilateral pyelitis. Pyelograms taken six months previously showed a slight filling defect and deformity of the right renal pelvis. Examination showed a marked cystocele. A catheterized specimen of bladder urine contained a large number of pus cells and a few tubercle bacilli. Cystoscopy

Fig. 5.—Distortion of bladder caused by pressure from a large fibroid uterus.

revealed some injection of the mucosa above a rather large right ureteral orifice. The bladder capacity was 150 c.c. The right kidney urine, in addition to an occasional blood cell, contained a few pus cells. Functional kidney tests showed a slight decrease of function on the right side. Cultures from both kidneys were negative; that from the bladder urine showed a growth of *Staphylococcus albus*. Guinea-pigs were inoculated and were reported negative for tuberculosis. Repeated examinations of the kidney and bladder urines failed to reveal tubercle bacilli again. The symptoms improved somewhat under bladder irrigations. Catheterization of the right ureter one month after the first examination was impossible because of an apparent obstruction about 3 cm. from its orifice. After intravenous injection, indigocarmin appeared on the left side in three and one-half minutes, but none appeared on the right side during nine minutes. The left kidney urine was microscopically negative. Operation was now considered justifiable, and the right kidney was removed. The organ showed chronic tuberculosis. This case also illustrates the fact that bladder symptoms are occasionally due to renal tuberculosis, notwithstanding negative guinea-pig inoculations and the absence of tubercle bacilli from the urinary sediment, even after repeated examination.

CASE 5.—A patient complained of frequent urination and at times difficult and painful urination. She also suffered from pain in the hypogastric region. Examination revealed a urethral stricture and cystocele. A catheterized specimen of bladder urine was chemically and microscopically negative. The symptoms improved after two or three urethral dilations, but did not clear up entirely. Some pus cells were now found in the urine. Cystoscopy and examination for ureteral strictures were negative. One week later, the bladder urine contained a large number of pus cells. Examination of the stained sediment revealed tubercle bacilli. Cystoscopy was done again, and urine was obtained from both kidneys. The left kidney urine contained a few pus cells. The guinea-pig inoculated with the left kidney urine was positive for tuberculosis. This case illustrates the fact that renal tuberculosis is sometimes responsible for bladder symptoms when the urine is chemically and microscopically negative. As a rule there is less bladder involvement in renal tuberculosis in women.

Although displacements of the uterus, sufficiently pronounced to cause congestion of the bladder wall

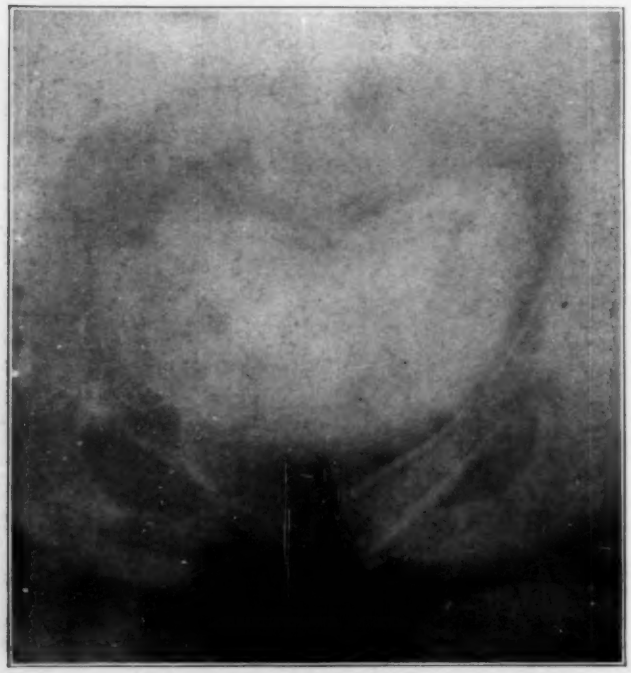

Fig. 6.—Diverticulum of female bladder.

through pressure or traction, are occasionally responsible for bladder irritability, we believe that the importance of these conditions is often exaggerated. In a case under recent observation, a markedly anteflexed uterus exerted sufficient pressure on the urethra to produce symptoms resembling those of a stricture. In another case, pressure on the bladder of a large fibroid on the anterior wall of the uterus was responsible for constant desire to urinate and nocturia, both of which disappeared following hysterectomy. In a third case, however, notwithstanding the presence of a fibroid uterus large enough to exert sufficient pressure to produce marked deformity of the bladder outline, no bladder symptoms were present.

General conditions, such as diabetes insipidus and diabetes mellitus, oxaluria and chilling of the extremities, especially the feet, must not be overlooked in searching for the etiology of bladder disturbances, and it must also be remembered that the bladder capacity is sometimes diminished as a result of some previous pathologic condition.

The sphincteric control of the female bladder is notoriously weak. This is supposed to be largely due to the weakness of the external sphincter. It is not uncommon as previously mentioned, to see women, in whom careful examination of the genito-urinary tract fails to reveal any abnormality, complain of the escape of a few drops of urine at times when laughing, crying, coughing or sneezing. This is usually due to injury to the fibers of the sphincter muscle received so frequently during labor, although cases are occasionally seen in women who have never borne children. Reflex influence to which the female bladder is particularly susceptible is largely responsible for bladder disturbances. In this connection, the similarity of nerve supply of the female urinary and generative organs is to be remembered. Obviously, a very thorough examination of the entire urinary and generative tract is indicated in these cases.

FOREIGN BODIES

Foreign bodies of all descriptions, from a crucifix to a china doll, have been found in the female bladder; but the common black wire hairpin is most frequently encountered. In one of these cases which have come under our observation, the hairpin was used for the purpose of masturbation and in the other to produce a miscarriage. In the latter instance, the patient's explanation of the presence of the foreign body was that, while she was sitting on a cushioned chair a few days previously, "something sharp stuck her and that the pin must have worked its way up there." Because of the dilatability and shortness of the female urethra, foreign bodies are more easily removed from the female bladder than from that of the male. This method succeeded admirably in our cases, the hairpins being readily removed following the insertion through a cystoscope of a piece of soft wire, the end of which had been bent to form a hook. This engaged the loops of the hairpins, and the latter were then readily withdrawn with these instruments.

ULCERS

So-called elusive ulcers, the importance of which has been emphasized in Hunner's papers on this subject, are being found in increasing numbers. Skene,[10] in his book on the female bladder and urethra, mentioned a very similar condition, terming it "interstitial cystitis."

NEUROSES

Difficulty in voiding, and partial or complete retention of urine in the absence of obstruction, cystocele or other pathologic lesions of the genito-urinary tract and having no connection with pregnancy or operation, are occasionally seen. This is frequently associated with tabes, and occasionally occurs in the presence of pernicious anemia or functional motor nerve disturbances. Its etiology is at times obscure. In early tabes, as in functional neuroses, retention is usually due to spasm of the bladder sphincter. In more advanced tabes, inhibition of the motor nerves supplying the detrusor muscle of the bladder is the responsible factor. Barney [11] found residual urine in more than 70 per cent. of his series of patients with tabes. Infection was present in over 50 per cent. Smith [12] has reported two interesting cases, one of syringomyelia and one of multiple sclerosis, in which bladder disturbances were

10. Skene: Diseases of the Bladder and Urethra in Women, 1887, p. 167.
11. Barney, J. D.: The Care and Management of the Tabetic Bladder, Boston M. & S. J., 1910, p. 163; 1911, p. 164.
12. Smith, Gilbert: Bladder Disturbances Due to Nerve Lesions, J. A. M. A. **69**: 1323 (Oct. 20) 1917.

early symptoms. Partial retention of urine was found in both instances. These cases should not be considered hopeless and denied treatment. Marked alleviation of symptoms, as demonstrated in the following case, often follows treatment of associated conditions, such as infection of the bladder or urethral stricture.

CASE 6.—A patient complained of a sensation of pressure in the hypogastric region, and difficult and interrupted urination periodically during the past four years. These symptoms had been constant for the previous two months. She was under treatment for syphilis contracted twenty-three years before coming under our observation. Examination revealed a stricture at the urethral meatus. The urine flowed very slowly through a urethral catheter inserted into the bladder, and 120 c.c. of residual urine was present. This contained a moderate number of pus cells. Cystoscopy revealed some injection of the bladder mucosa, but very little trabeculosis. The kidney urines were microscopically negative. The subjective symptoms quickly disappeared under dilation of the urethral stricture and irrigation of the bladder, and the patient was most grateful for the relief obtained. Although infrequent, the possibility of tabes in women as an etiologic factor in bladder disturbances must always be remembered.

Functional nerve disturbances are, in rare instances, apparently responsible for retention of urine. In the following case, no other etiologic factor could be found:

CASE 7.—An extremely nervous, overworked young woman complained of complete retention of urine of thirty-six hours' duration, and pain in the hypogastric region. She had always had periodic difficulty at the beginning of urination, but had never suffered from pain until the present time. A complete investigation, including cystoscopy, functional kidney tests and Wassermann examinations were negative. The symptoms disappeared after a number of bladder irrigations with weak silver nitrate solution. The frequency with which excitement in women will be responsible for bladder irritability is a common observation.

CALCULI

Calculi are seldom found in the female bladder. This is supposed to be due largely to the dilatability of the urethra and the absence of a prostate gland, but the fact that kidney and ureteral stones are less somewhat frequent in women must also be taken into consideration.

TUMORS

The new growths most commonly found in the bladder are polyps, benign papillomas and carcinomas. The former are seen more frequently in the female bladder and are usually located at the sphincter. As a rule they produce no symptoms, and their etiology is sometimes obscure. They may be due to irritation resulting from a present or past infection, although we have seen a number of cases in which no history of previous genito-urnary disturbances could be obtained. Unless they encroach on the sphincter or the ureters, malignant tumors of the bladder, like those of the parenchyma of the kidney, often attain considerable size before producing symptoms. In one of our cases (Fig. 7) it was only after involvement of the sphincter that frequency and difficulty appeared. In this case, although the tumor was the size of an orange and infiltrated the entire bladder wall, the patient complained of no vesical disturbances until ten weeks prior to examination. Because of the shortness of the urethra and the proximity to the vagina, vesical growths are more accessible in the female. We have gained the impression from our own personal experience that they yield more readily to treatment in this sex. Lewis and Moore [13] have obtained good results with radium, fulguration and deep roentgen-ray therapy, and Kelly and Neill [14] report some very favorable results following the treatment of these cases with radium and fulguration.

INJURIES

Vesicovaginal fistulas following labor, operation, radium therapy or external violence are common, but retroperitoneal fistulas following laceration of the posterior bladder wall are seldom encountered. The following case is of interest in this connection:

CASE 8.—A hysterectomy was performed by an excellent surgeon because of a large uterine fibroid. The bladder wall was thinned out and the peritoneum, closely adherent to the tumor mass, which extended upward to the umbilicus. In an attempt to separate the thin bladder wall from the uterus, the base of the former organ was torn. Following the removal of the uterus, the tear was closed with a continuous catgut suture. Six days later the patient complained of a slight cough, tenderness along the lower costal margin anteriorly, and some pain on inspiration at the base of the right lung.

Fig. 7.—Tumor (carcinoma) of female bladder.

Distant breath sounds and some very fine râles were heard over this area. A diagnosis of pneumonia was made. Two days later, the tenderness was more severe, some swelling was apparent, and the patient also complained of pain in the right groin, worse on voiding, of burning and frequent urination. A catheterized specimen of bladder urine contained a large number of pus cells, and 240 c.c. of residual urine was found. Cystoscopy the following day revealed marked inflammation and edema of the bladder mucosa. The ureteral orifices were not visible. Indigocarmin did not appear on either side within twenty-five minutes after intravenous injection. Operation was advised, but refused by the patient. One week later, the patient's consent having been finally obtained, an oblique right lumbar incision was made down to the fatty capsule, and half a pint of thick, foul-smelling pus evacuated. No pus was found inside the fatty capsule. Some urine escaped through the wound for about six weeks after the operation. Cystoscopy was again performed, and it was now possible to catheterize the right as well as the left ureter. The right kidney urine contained an occasional pus cell; the left

13. Lewis, Bransford; and Moore, Neil: Carcinoma of the Bladder, Urol. & Cutan. Rev. **24**, 1920.
14. Kelly and Neill: The Treatment of Tumors of the Bladder, Urol. & Cutan. Rev., May, 1924, p. 257.

was microscopically negative. Cultures from both showed colon bacilli. The patient made an excellent recovery after a somewhat prolonged convalescence. The bladder fistula would have closed much more quickly if lumbar incision permitting drainage had been allowed by the patient when the diagnosis of extraperitoneal extravasation and infection was first made. The accompanying cystogram (Fig. 8) was taken a short time before the fistula had healed

Without immediate operation, intraperitoneal lacerations are rapidly fatal. Delay in operating on extraperitoneal lacerations at best retards convalescence and results in intense suffering.

Although the cystograms obtained following the administration of sodium iodid by mouth or intravenously, as suggested by Osborne, Sutherland, Scholl and Rowntree,[15] are not as clear as those resulting from direct injection of the bladder, this method is of decided value and satisfactory pictures are usually obtained. It eliminates the necessity for catheterization in sensitive or strictured urethras, and the danger of catheter infection is avoided. Notwithstanding the value of cystography in pathologic conditions of the female bladder, this procedure has received very little attention. It is of great diagnostic value in determining the presence, size and position of diverticula and also of tumors, when hemorrhage, diminished bladder capacity, intolerance or the position of the growth make cystoscopy unsatisfactory. Figure 7 illustrates this point. In addition to demonstrating the value of cystography, this case also serves to emphasize the importance of early examination of the urinary tract in the presence of hematuria or pyuria. Although only ten weeks had elapsed since the appearance of the first symptom, the tumor had attained the size of an orange. Cystography is also of value in determining distortions and deformities of the bladder resulting from pressure or traction due to extravesical conditions.

CONCLUSIONS

Almost every woman suffers from bladder disturbances at some period of her lifetime.

Residual urine and infection are present in less than one half of the bladders of pregnant women.

Regurgitation of urine is not frequent during pregnancy.

Not all bladder disturbances during pregnancy should be ascribed to this physiologic function.

Contrary to popular opinion, cystoceles are frequently seen unaccompanied by residual urine or infection.

Residual urine is present in 80 per cent. of postpartum cases. It is almost always present following operation on the female pelvic organs.

Ascending infection is not uncommon.

Repeated examination of the upper urinary tract is demanded when the symptoms fail to respond to treatment directed toward the more apparent condition.

The female bladder is more susceptible to direct and reflex influences than that of the male.

The two glass test should be more frequently used for the differential diagnosis of urethral and bladder conditions in women.

Notwithstanding the marked frequency with which urethral strictures are responsible for bladder disturbances in women, they continue to be overlooked in many instances.

Apparently hopeless cases are sometimes accompanied by associated pathologic conditions, the treatment of which often results in much relief to the patient.

Cystography following the administration of sodium iodid by mouth, as well as by direct injection, is often of great value in the diagnosis of pathologic conditions of the female bladder.

Urology in women is an essential part of urology, and it lies within the domain of the urologist rather than that of the gynecologist, obstetrician and abdominal surgeon.

15. Osborne, E. D.; Sutherland, C. G.; Scholl, A. J., and Rowntree, L. G.: Roentgenography of the Urinary Tract During the Excretion of Sodium Iodid, J. A. M. A. **80**: 368 (Feb. 10) 1923.

ABSTRACT OF DISCUSSION

DR. ROBERT H. HERBST, Chicago: Dr. Stevens has again called attention to the female bladder, and has emphasized and discussed at length those cases in which the patient complains of frequent, painful urination, and after careful study of the upper urinary tract, including the bladder, nothing abnormal is found. There are several conditions of the lower urinary tract which may explain these symptoms and which are sometimes overlooked: First, a chronic urethritis, not necessarily resulting from a gonococcus infection, but due to an invasion of the urethra by some of the organisms that inhabit the genital tract in the female. Second, stricture. Strictures, both fibrous and the soft infiltrating type, are more common in the female than is generally believed, and are discovered only by careful examination with a bulb sound. Third, an intermittent type of pyelitis. This may be missed, owing to the fact that the examination of the kidney urine is made during an inactive period of the infection. It might be well at this time to call the attention of our gynecologic confrères to the danger of traumatizing the bladder during pelvic and vaginal operations. Retention of urine frequently follows such procedures; a catheter is used to relieve the retention, and the subsequent cystitis is charged up to the catheter, when in most instances it is the direct result of injury from handling the bladder during the operation. An interesting lesion seen in the female bladder, but rarely in the male, is the so-called linear ulcer or fissure of the bladder. These ulcers are most commonly found on the posterior wall of the bladder above the ureteral orifices. They produce a severe type of frequent, painful and imperative urination, usually accompanied by hematuria. The bladder becomes contracted, and when distended with water and observed through the cystoscope, small droplets of blood may be seen oozing from the fissure. Recently, I treated two cases with diathermy, passing a pointed electrode along the course of the ulcer. This has been followed by healing with a linear scar. I was pleased to hear Dr. Stevens stress the importance of incontinence of urine in the female. These patients are often told that the condition is difficult to control. We have had excellent results in these cases by plicating the neck of the bladder, using the method described by Cabot and Young.

DR. DANIEL N. EISENDRATH, Chicago: I was pleased to hear Dr. Stevens speak favorably of ascending lymphogenous infection. Many urologists were considerably opposed to this theory at first, but we all agree that certain cases cannot be explained on the urogenous, i. e., lumen of the ureter, route alone. I wish Dr. Stevens would tell us how often he finds diverticula of the bladder in the female. I saw one recently in a woman, aged 72.

DR. VICTOR D. LESPINASSE, Chicago: We must realize that the female bladder is different from the male. In the examination of the female bladder, we find many conditions of low grade infection, accompanied by the symptoms of frequency and dysuria. Whether one believes that the source of these infections are from obstruction in the urethra or extension from the urethra, or whether the source is higher up in the ureter or kidney, the discovery of the source and exact nature of the primary lesion is a problem that must be worked out to obtain results in the relief and cure of the female cystitis. Low grade inflammatory lesions are very characteristic of the female bladder and very rare in the male. Regarding foreign bodies, I imagine that hairpins will be

less frequently found hereafter for they are not so much in evidence now; but if any one should have a case of hairpin trouble, the point I wish to make is that the patient should not be examined vaginally or bimanually, or if this is done it should be done with the greatest gentleness. We had a case in which the hairpin was pushed through a fold in the bladder wall. This amounted to nothing because we could get the loop of the pin and pull it out, and there was no extravasation and no distention, but it is easily understandable how such an accident might be serious. The next point I wish to mention is the condition of the urinary tract in pregnancy. We have many urologic conditions that have been more or less latent that increase and are discovered at some time during pregnancy, and become of major importance during pregnancy, or give enough symptoms during pregnancy so that the patient's attention is called to them during this period. Previously it has been considered that these symptoms and conditions are a part and parcel of the pregnancy but most of them are latent and exacerbate during the strain of pregnancy. A woman was taken with fever and pain in the right side. I was asked to see her and to relieve this supposed right sided pyelitis. We performed cystoscopy, and the catheter on the right side, went up to the brim of the pelvis, then had a little jump and went on up, and then began to drip clear urine continuously, showing that the right-sided pain was due to hydronephrosis. The left side was then catheterized and we obtained urine, but this urine contained much pus. This woman's condition was due to a left-sided kidney infection; and the pain on the right side was due to an obstruction of the ureter.

DR. BRANSFORD LEWIS, St. Louis: One of the most valuable points made by Dr. Stevens was that in reference to the frequency and severity of retention following labor. We all know that urinary stasis and infection go hand in hand. That was pointed out by Guyon years ago. There is a general impression among practitioners that catheterization in these cases of urinary infection should not be undertaken. They have a horror of it and say it will establish infection and all sorts of complications. Dr. Stevens informs us that it is the retention of urine itself that invites this infection, which I think is exceedingly logical. His establishment of regular catheterization to prevent that seems to me to be sensible and logical. I have only one suggestion, in the form of a question, as to whether this could not be accomplished by a retained catheter for a few days, if there is a very large amount of infection. I have been using in both the male and female the retained catheter whenever I thought it was indicated, without any sign of disturbance. I have seen women with retention from various urinary obstructions that had never been suspected or recognized, although they had been present for a number of months or even years, and had developed an infection and sometimes marked hematuria. These conditions have been overcome by dilating measures and irrigations.

DR. P. E. MCCOWN, Indianapolis: A condition that I find not infrequently that Dr. Stevens did not mention was described by Pelouse in 1916. He called these lesions cystic bodies, on the wall of which was usually found a blood vessel. I believe that at that time he attributed the condition to the occurrence of tuberculosis in some portion of the body. I thought he meant in the urinary tract, but he told me later that he though they were due to tuberculosis in some other part of the body. I find them not infrequently, and they are usually associated with a general cystitis. We rupture them with scissors, and if the cystitis that accompanies them is cured, they seem to have no return. These lesions have not been mentioned in the last several years, and I wish that Dr. Stevens would tell us whether he commonly finds them in his experience.

DR. JAMES A. GARDNER, Buffalo: Do I understand Dr. Stevens to state that he found strictures in the female urethra in 43.5 per cent.? That seems such a large percentage that I wished to make sure of the figures. I think we all find that the female meatus is often contracted; but, as a rule, after we have dilated the meatus we can almost put a finger into the urethra.

DR. WILLIAM E. STEVENS, San Francisco: Dr. Herbst spoke about the diagnosis of ureteral strictures in the female. I think that a great many general practitioners attempt to diagnose strictures by using an ordinary sound or bougie. If that is done, one will overlook many strictures in the female ureters. The proper method of doing that is by means of the olive tipped bougie. After withdrawing it, the hang or tug can be detected in case the ureteral stricture is present. Replying to Dr. Gardner, I consider that a narrow meatus is anatomically a stricture. It produces symptoms and is therefore to be considered a stricture. These things are much more common than is suspected; they cause obstruction, produce frequency of urination and frequency painful urination; and I think they should be considered strictures just as those higher up, which are not nearly so common. Dr. Eisendrath asked about my experience in finding diverticula of the female bladder. I have seen very few, and think they are much less common than those in the male bladder.

SPOROTRICHOSIS

A CLINICAL AND BACTERIOLOGIC STUDY OF FOUR CASES WITH UNUSUAL CLINICAL MANIFESTATIONS *

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Since Schenk,[1] in 1898, described the sporothrix a sufficient number of cases have been reported in this country and abroad to indicate the usual clinical picture that results from infection by this organism. This usually is in the form of multiple, subcutaneous, infective granulomas, with a tendency toward central softening, abscess and ulcer formation. The bulk of the reported cases in the United States have comprised such lesions distributed along the course of lymphatic vessels proximal to a primary sporotrichotic chancre. The number of such cases is so great that specific reference seems unwarranted. Abroad, following the observations of de Beurmann and Gougerot [2] and others, widely disseminated gummatous infections were reported. Less frequently, one may find references to visceral, bone or mucous membrane lesions. Warfield [3] reports infection of the lungs and gastro-intestinal tract followed by death. Grigsby [4] and others report similar cases. Extensive visceral infections are reported by Gaucher and Maunier.[5] In Hoyt's [6] case there was gastro-intestinal involvement. Mucous membranes, muscle and bone cases are described especially by Darier.[7] Gougerot [8] states that bone lesions of sporotrichosis resemble closely and are often mistaken for tuberculosis. Cregor [9] recently reported a case with bone involvement which was in many respects similar to one described below. The following cases are reported because of unusual clinical pictures, interesting facts regarding infection and the possibility of a hitherto undescribed cutaneous reaction.

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* Read before the section on Dermatology and Syphilology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Schenk: Bull. Johns Hopkins Hosp. **9**: 268, 1898.
2. De Beurmann and Gougerot: Arch. f. Dermat. u. Syph. **8**: 36, 1906.
3. Warfield: Tr. A. Am. Phys. **36**: 5, 1921.
4. Grigsby, C. M., and Moore, R. H.: South. M. J. **15**: 684 (Sept.) 1922.
5. Gaucher and Maunier, cited in Darier's Textbook of Dermatology, 1920, p. 606.
6. Hoyt, R. E.: U. S. Nav. M. Bull. **15**: 809 (Oct.) 1921.
7. Darier, J. A.: A Text-Book of Dermatology, Philadelphia, Lea & Febiger, 1920, p. 607.
8. Gougerot, cited by Warfield: Tr. A. Am. Phys. **36**: 5, 1921.
9. Cregor, F. W.: Sporotrichosis, J. A. M. A. **79**: 812 (Sept. 2) 1922.

REPORT OF CASES

CASE 1.—A white boy, aged 8 years, presented at the annual meeting of the Pittsburgh Dermatological Society, April 19, 1923, at the age of 18 months, had a blind boil, which began at the base of the left thumb. This did not heal, and was followed by a number of similar lesions along the course of lymphatics on the left arm. Later, others appeared on the right arm, the neck and both legs. The disease slowly progressed, involving the skin, glands and bones for a period of six years and remaining unrecognized. Several operations were performed, and various types of medication were applied without result. The child had been so crippled early in life that he practically never was able to walk. When brought to the clinic, he appeared as a small, undernourished child with marked deformities of all the limbs. Moderate atrophy of disuse was present in practically all the muscles. Scars of operations were present on the left side of the neck, the left hand and over several of the long bones, while scars of healed or partially healed lesions were found in numerous places. Ulcerative lesions were present on both hands, feet, elbows and knees and on the sides of the neck. These varied in size and were irregular in outline, having undermined edges and bases of flabby granulation tissue, and were for the greater part located over the smaller joints. Some were covered with thick crusts. Others secreted a thin, yellowish pus. Some small sinuses in various places near the ulcerations also oozed the same kind of pus. The lesions were not painful unless disturbed, and most of the time the child was fairly comfortable. Roentgenograms disclosed widespread bone involvement with considerable destruction, particularly at the smaller joints. Cultures described below revealed the presence of a sporothrix.

CASES 2 AND 3.—These cases were so similar that they can be considered together. Both patients were younger sisters of Patient 1, aged 6 and 4 years. The lesions appeared first in both cases after the puncturing of the ears for earrings, and save for the local manifestations of the disease, the children were both in excellent health. The disease began with small, reddened, indurated spots on the lobes of the ears. These increased in size until small abscesses were formed, and several cervical glands of the anterior chain on the same side were enlarged. The abscess opened and much of the swelling subsided, but the ulceration remained. These had been present for about eight weeks when the children reported to the clinic. Each ulcer measured about 3 by 4 cm. and was irregularly oval, having undermined edges and a base of pale, unhealthy looking granulation tissue. Parts were crust covered, while other areas were bathed in a grayish yellow pus. Small pus pockets were found at intervals around the edges, some of which had the appearance of sinuses. No other lesions were present on either child. Culture demonstrated the sporothrix in both cases.

CASE 4.—A white man, aged 30, an agent, presented himself with lesions on the feet; a clinical diagnosis of epidermophytosis was made. All the toes and the spaces between showed a vesicular dermatitis, with much oozing and crusting, which had been present with intermissions for several years. While the patient was in the army, a generalized dermatitis of unknown origin had been present. Several of the toe nails showed thickening, striations and a piling up of scales under the free edges. Occasionally, a patch of vesicular dermatitis appeared on the hands. His condition steadily improved under the use of Whitfield's ointment and small doses of roentgen ray. Repeated cultures showed no epidermophyton, but in several of the tubes a typical sporothrix, similar to the one isolated in the other cases, was found. This organism was demonstrated by culture repeatedly, but, as the condition was improving with the treatment mentioned, no change was made.

This case antedated the others by some months and was a private case, so there could be no connection whatever between them. We feel that the facts given make this an extremely interesting case. Whether the sporothrix was the causative organism here or not we are at a loss to say, but it was the only fungus that was found.

TREATMENT

To Cases 1, 2 and 3, potassium iodid was given internally, beginning with 5 grains (0.3 gm.) three times a day, and increasing to 10 grains (0.6 gm.) three times a day. Fractional doses of roentgen ray were given on all lesions, and clean dressings but no antiseptics were applied. Improvement was noted within a few days, and at the end of six weeks, Patients 2 and 3 were well and Patient 1 was beginning to walk. During the next several weeks, some of the sinuses discharged small sequestrums, and at the end of about five months all the lesions were healed. The boy has reported several times since with one or two of the old sinuses reactivated, but these have always healed very promptly, and at present he is receiving orthopedic attention. As noted, the unproved case was treated with Whitfield's ointment and roentgen rays.

BACTERIOLOGY

Repeated cultures from Cases 1, 2 and 3 revealed various forms of cocci and bacilli which are usually found in old wounds. Finally, scrapings were made from some of the ulcerations and sinuses, dried for three days, and planted on Sabouraud's medium. In several days, a peculiar colony was present, which in smears showed a mixture of staphylococcus and a fungus. Dr. McMeans of the department of bacteriology of the University of Pittsburgh examined the culture and reported a sporothrix of the variety described by Schenk. The growth appeared first as a white, smooth, velvety colony, which later on developed a fawn color and a wrinkled appearance with the central crater-like opening, and with a flat finely radiating areola. It is noteworthy that in these cases positive cultures were not obtained until after repeated failures on account of the fact that the mediums were overrun by contaminating organisms. We found, as Cregor,[9] Sutton [10] and others have mentioned, that the organism is not so easily obtained from patients, particularly in pure culture. This was overcome by drying the suspected material for three days before planting. It is possible that some of the failures to identify the organism in typical clinical cases may have occurred for the same reason. Further, we feel justified in pointing out that classification of the organism, even after obtaining a relatively pure culture, is not so simple a matter as the technical descriptions would lead us to believe. Smears appear as tangled masses of broken mycelia in which the complete morphology is difficult to reconstruct. Care must be taken to break up the culture as little as possible. The oval and cigar shaped spores are seen in groups of two, either on the sides of branching septate mycelia or, more abundantly, on the ends of the hyphae. The organism is an obligate aerobe and grows at room temperature, the threads and spores being observed after from four to seven days. The various strains that have been isolated from human infections differ only slightly, and many observers believe they should not be classed as different organisms. It has also been stated that sporotrichosis in animals is a different infection from that in human beings. This seems to be disproved, as direct inoculations have been successful. Meyer [11] mentions a case in which infection of a laboratory worker handling an equine strain occurred on a formaldehyd dermatitis. Wilder and McCullough [12]

10. Sutton: Boston M. & S. J. **164**: 179, 1911.
11. Meyer, K. F.: The Relation of Animal to Human Sporotrichosis, J. A. M. A. **65**: 579 (Aug. 14) 1915.
12. Wilder, W. H., and McCullough, C. P.: Sporotrichosis of the Eye, J. A. M. A. **62**: 1156 (April 11) 1914.

cite a similar case. Carougian [13] speaks of a veterinarian who was infected while he was treating a diseased horse. A few other direct infections have occurred in Minnesota. Moore and Davis [14] report a case that followed the bite of a field mouse. Pringault and Vigne [15] found the organism in a granulomatous disease in rats. Since the experimental work of de Beurmann, Gougerot and Gaucher, infections in cats, monkeys, guinea-pigs and rabbits have been demonstrated. The oragnism has also been found in various trees and grains. Minor cultural and clinical appearances only serve to establish the identity of several subgroups of the same organism.

COMMENT

From 1898 to 1917, only eighty-three cases, fifty of which were culturally proved, were described. Three of these were from Pennsylvania. Since then, we have found no reports from this state, though the total number has passed well beyond the 200 mark. This is curious in that the Ohio, Allegheny and Missouri river valleys are the locations in which the disease is most frequently found in horses, a source that is often quoted for human infections. Further, only single human or animal infections in a locality are noted. The cases reported present several unusual features. Case 1 demonstrates the possibility of widespread dissemination of the infection following the usual row of subcutaneous abscesses; it further indicates the possibility of bone liquifying abscesses simulating tuberculosis. This patient was subjected to operative procedures six times under the foregoing erroneous diagnosis. Cases 2 and 3 are unique in that they are examples of a human source of inoculation. Their clinical appearance may be passed without comment; their particular interest lies in the mode of infection. The three taken together represent a family group. The fourth case is presented only as a possible case of sporotrichosis. The only support of the diagnosis is the fact that there were repeated positive cultures to the exclusion of other fungi.

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ABSTRACT OF DISCUSSION

Dr. D. J. Davis, Chicago: This is an interesting group of cases. In the first place, these cases come from a certain region of the country (Pittsburgh), and that is always interesting in connection with the study of chronic disease, especially the mycoses. It brings to mind a group descrbied by Meyer in Butler County, Pa., and it leads me to ask whether there might have been some connection between these two groups in Pennsylvania. Another interesting point is the geographic distribution. Here is a disease which we have looked on for a long time as being localized in certain parts of the world. In the Mississippi Valley it is common in human beings. In Madagascar it seems to be common in mules, and in South America it is found in rats and in human beings. There is another well known focus in France. However, while this geographic distribution of this disease is recognized, the more the disease is studied the more we see that isolated cases occur more widely distributed than we ever believed. To what is this due? Is it due to the fact that the disease is being recognized or is it due to the fact that the disease is becoming more widely disseminated? This is important and should be known. I should like to urge dermatologists to put on record all such cases so that we may be able to study more carefully this important problem of distribution. There are many problems connected with the prevention of this disease. The problem of transmission of the disease from the lower animals is of importance. We have records of cases now in which the infection came from the horse, mule, chicken, rat and mouse, and other lower animals. You have probably all seen reports from Washington of a disease, tularemia, which is also known as "jack rabbit disease." It is often transmitted from rabbits. I recall a case seen in the Cook County Hospital which was diagnosed as typical sporotrichosis, and on inquiry into the history of the case it was shown that the patient, a woman, had dressed a rabbit a short time before the disease appeared and received a skin puncture from a splintered bone of the animal. A primary lesion appeared with regional lymphatic hyperplasia. Cultures made a little later were negative. Recovery ensued and the patient left the hospital. I have wondered since whether this might have been a case of tularemia.

Dr. Harry R. Foerster, Milwaukee: While the diagnosis may be somewhat in doubt in the last case, I have an explanation to offer which I think may account for it. French observers of sporotrichosis have called attention to the fact that carriers of this disease have been found in whom the sporothrix occurs as a saprophyte, not producing any of the symptoms of the disease. It is possible that in the case with the trichophyton type of lesions the organisms may have been of insufficient virulence to produce antibodies in the system, the agglutination and complement-fixation tests therefore failing to show reactions, though local cutaneous lesions were present. I wish to call attention to the importance of making cultural examinations in all mycotic types of granulomas. I have recently seen a solitary lesion of the verrucous type which was thought to be an epithelioma but which culture proved to be sporotrichosis, and which responded to potassium iodid. I have also seen recently a patient with multiple gummas, having all the clinical characteristics of the multiple cutaneous and subcutaneous gummous type of sporotrichosis, which were shown on culture to be lesions of blastomycosis.

Dr. F. W. Cregor, Indianapolis: I wish to call attention to the inadvisability of making cultures from sinuses discharging pus. Seldom will these cultures grow. In the case I reported, had we depended on this and had we not accidentally found the organism under the microscope, we would not have been able to diagnose the case. There is a possibility of growing these cultures on a medium, but when secondary infection is present this possibility is very limited; there is some symbiosis which the iodids afterward destroy. If there is a nodule that has not been secondarily infected, the opportunity to grow a culture will be much better in such lesions.

Dr. Everett S. Lain, Oklahoma City: This disease is quite common in our part of the country, and I believe the subject should be of interest to all because in the past there is no doubt that many cases have been overlooked. After hearing Dr. Cregor's report of sporotrichosis of the bone two years ago, I was able to make a diagnosis recently in a similar case. The patient was a child with lesions of the bone similar to the photographs shown by Dr. Guy and Dr. Jacob today. The patient had previously received all kinds of treatment for syphilis, but necrosis had been going on for several years. The history indicated an external origin. After repeated attempts with failures, because of mixed infection, we finally got a culture. The case recovered under iodids with local dressings of surgical solution of chlorinated soda. It may be of interest to report a case of infection from cattle. The photograph of the case is shown in the last edition of Stelwagon's book. The patient milked a cow after a scratch on her hand from a wire as she came through the gate. In this case the sporothrix was demonstrated both by culture and microscopically. I have known of two cases occurring from boys swimming in old pools where refuse from stables had been thrown. This disease is very common in the Mississippi Valley, and we should be on the watch for it at all times.

Dr. Frederick D. Weidman, Philadelphia: In the section around Philadelphia, the disease is quite uncommon. I am sure that in the last few years not more than six cases have occurred. I also wish to stress the desirability of taking cultures from unopened lesions. The South Americans have been very active recently in describing sporotrichosis of the scalp, stating that cases considered syphilitic have really been

13. Carougian: Bull. et mém. Soc. méd. d. hôp. de Paris **34**: 507.
14. Moore, J. J., and Davis, D. J.: J. Infect. Dis. **23**: 253 (Sept.) 1918; abstr. J. A. M. A. **71**: 1091 (Sept. 28) 1918.
15. Pringault and Vigne: Bull. Soc. franç. d. dermat. et d. syph. **7**: 442, 1921.

due to the sporothrix. The lesions cleared up on iodids internally, which is insufficient basis that *Sporotrichum* was the cause. I do not believe that these cases are as yet proved. I have seen several cases in which *Sporotrichum* has appeared to be the cause of tinea cruris and tinea unguium. I have never been satisfied that *Sporotrichum* caused tinea unguium, but I am satisfied that, since no other organism was ever found in our tinea cruris cases, these were due to *Sporotrichum*.

DR. WILLIAM H. GUY, Pittsburgh: I fear that Dr. Davis' modesty did not permit him to call our attention to the invaluable work he had done in preparing the way for clinicians in the study of sporotrichosis. Dr. Davis, soon after the work of Schenck and de Beurmann, went abroad and was able to see their work and their cultures. He is not alone in his views. Many others have obtained similar results from culture and serology. No name but Schenck should be appended to *Sporotrichum*. Dr. Davis and others have been able to take various so-called strains of *Sporotrichum* from various parts of the world and grow them, showing a great similarity. He has been able to take the usual pigment-producing culture and by subculturing a central white tuft to grow through many generations a form of *Sporotrichum* that does not produce pigment. This raises the interesting question as to whether the various strains that are seen are not merely mutant forms of *Sporotrichum* (Schenck). Regarding infection, we were able to find in this group of cases no source of infection. The widespread incidence of *Sporotrichum* in horses, mules, in rats and mice and, finally, various plants, would indicate that there is a possibility of sporadic infections from such sources. I should like to mention that we overlooked in our study of these cases the use of the sporotrichin test which Dr. Davis makes by injection into the skin of the killed spores of *Sporotrichum*. Positive inflammatory results are considered diagnostic. Dr. Foerster's possible explanation concerning our fourth case is of interest. We do not present it as a case of sporotrichosis, but as one in which only *Sporotrichum* was found. Perhaps he is a carrier, the organism being saprophytic. The agglutination reaction in the case speaks against such a theory. French authorities have reported cases with preexisting lesions of sporotrichosis which had eruptive manifestations similar to our fourth case. Our patient, however, had no preexisting lesion. In regard to the cultural points raised by Dr. Lain, Dr. Cregor and Dr. Weidman, I wish to call attention to the fact that in cases that have existed for years, typical unopened lesions are not available for examination. The long existence of the disorder makes it very difficult to recover the organism. That is why we raised the point that it is well to scrape the edge of the lesion, dry the material for a matter of several days, and then plant on Sabouraud's medium. If our experience indicates anything, this procedure will facilitate diagnosis in a few of the cases that would otherwise remain unrecognized.

Amino-Acids.—The amino-acid content of the blood represents a food product on its way from the intestine to the tissues. A definite increase in the aminonitrogen content of the blood during protein digestion was first conclusively demonstrated by Van Slyke, who utilized his own nitrous acid method. Subsequent investigations have enabled us to follow the metabolism of these bodies, their storage in the liver and muscles and their ultimate deamination in the latter organ. Apart, however, from the great increase in the aminonitrogen content of the blood in acute yellow atrophy, an increase which is in part attributable to the massive tissue autolysis which is occurring, and in part to the failure of deamination resulting from destruction of the liver tissue, the estimation of these bodies is of little importance in medical practice. The normal aminonitrogen content of the blood varies from 5 to 8 mg. per hundred cubic centimeters, rising during protein digestion to 10 or 11 mg. In a case of acute atrophy, recorded by Van Slyke and Stadie, the aminonitrogen of the blood rose to a figure of 26 mg. per hundred cubic centimeters, the amino-acids forming 61 per cent. of the urinary nitrogen instead of the normal 2 per cent.—De Wesselow: The Chemistry of the Blood in Clinical Medicine, 1924.

SOME STUDIES ON MENTAL HYGIENE NEEDS OF FRESHMEN UNIVERSITY STUDENTS

PRELIMINARY REPORT *

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AND
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MINNEAPOLIS

It is generally agreed that some college students need help in properly adjusting themselves to their individual problems. That this number is larger than is popularly believed is probably true.

The special problems of the university student, often intensified by the stress and strain of adolescence, have been admirably described by Williams,[1] Campbell,[2] Harrington,[3] Taft,[4] Kerns [5] and others. As there is very little organized work in mental hygiene being carried on by the universities, these particular students, in a large majority of instances, are not receiving the aid they need—one might even say the education they need, for education really consists of a training that will prepare one properly to meet future problems.

MENTAL HYGIENE IN UNIVERSITIES

Some attempts have been made to assist students properly to adjust themselves. In 1922, in the United States, approximately seven universities out of fifty-four were making, or hoped soon to make, some organized effort in this field.[6]

In reply to a brief questionnaire sent, in March, 1924, to the directors of the student health services of twenty universities known to have well organized departments of student health, eight of the eighteen who answered are not attempting to do any work along the lines of mental hygiene; seven are when individual cases come to their attention, and three are making a serious effort to do organized work with the aid of one or more psychiatrists on their staffs. Fifteen directors believe this to be a function of the student health service; three doubt the advisability of undertaking this at the present time, either on account of the expense or because specialists are not available. In five universities, such work is being done in whole or in part by the psychologic and hygiene departments. The difficulty of making contacts is recognized by all, and most of the cases are either referred by the deans and faculty advisers or are "picked up" in the medical dispensaries. One of these universities has an excellent questionnaire to bring out traits suggestive of a psychoneurotic make-up. Four health services, not employing psychiatrists, have the privilege of consultation when needed. Three directors believe that a neuropsychiatric worker would be of value, and five do not know whether the expense of such a worker would be justified. However, no health service employs one. In reply to a question as to the

* From the Department of Medicine and the Student Health Service, University of Minnesota.
* This study was carried out with the aid of a grant from the Research Fund of the University of Minnesota.
* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Williams, F. E.: Mental Hygiene and the College Student, Ment. Hyg. 5: 283 (April) 1921.
2. Campbell, C. M.: The Responsibilities of the Universities in Promoting Mental Hygiene, Ment. Hyg. 3: 199 (April) 1919.
3. Harrington, M. A.: Mental Disorders in Adolescence, Ment. Hyg. 4: 364 (April) 1920.
4. Taft, Jessie: Mental Hygiene Problems of Normal Adolescence, Ment. Hyg. 5: 741 (Oct.) 1921.
5. Kerns, H. N.: Cadet Problems, Ment. Hyg. 7: 688 (Oct.) 1923.
6. Morrison, A. W.: Mental Hygiene and Our Universities, Ment. Hyg. 7: 258 (April) 1923.

percentage of freshmen needing mental hygiene, five gave figures that varied from 2 per cent. to 10 per cent. One stated that 60 per cent. needed help in class adjustment and 50 per cent. in social adjustment. Another director felt that there was "a much larger number than was generally recognized," and that the need was not limited to freshmen. One stated that this number depended on the definition of personal adjustment, and that he could think of "a definition that would lead to an estimation of 100 per cent."

THE UNIVERSITY OF MINNESOTA
UNIVERSITY HEALTH SERVICE

Name No.
City Address
Home Address .....

ADDITIONAL ENTRANCE HISTORY
Men and Women

Fill out this blank completely and carefully. The information given will be held as confidential by the Students' Health Service and will be used only to assist students in adjusting themselves to the University community.

UNDERLINE CORRECT ANSWER

1. Has your time in school been broken in on by (1) illness; (2) work; (3) other causes?
Have you found it difficult to get along with your teachers? Yes, no, occasionally, frequently.
Have you done as well in your studies as your brothers and sisters? Yes, no.
Are you preparing for any particular business or profession? Yes, No. What?

2. Have you ever had:

Infantile convulsions	Yes	No	Age
Night terrors	Yes	No	Age
Nervous prostration	Yes	No	Age
Chorea (St. Vitus dance)	Yes	No	Age
Convulsions	Yes	No	Age
Stammering	Yes	No	Age
Hysterical attacks	Yes	No	Age
Migraine (sick headaches)	Yes	No	Age
Severe injuries (particularly to head)	Yes	No	Age
Fears or dreads of any kind	Yes	No	Age

3. Underline any of the following which you think might describe any of your constant characteristics or your make-up:

Lively	Shy
Sociable	Retiring
Pushing	Self conscious
Talkative	Bashful
Optimistic	Quiet
Domineering	Secretive
Irritable	Seclusive
Changeable	Unsocial
Lack of persistence, concentration, and application	Lack of usual interest in the opposite sex
Gloomy	Exceptionally religious
Worry easily	Day dreamer
Fits of blues	Distrustful
Difficult to make decisions	Suspicious
Easily discouraged	Easily misunderstood
Emotionally unstable (either up or down)	Unduly sensitive
	Feeling of being discriminated against

4. Have any of the following persons ever had any nervous breakdown or mental disorder:

Paternal grandparents	Yes	No	What?
Maternal grandparents	Yes	No	What?
Father	Yes	No	What?
Mother	Yes	No	What?
Brother	Yes	No	What?
Sisters	Yes	No	What?
Other relatives	Yes	No	What?

Are there any additional facts about yourself that you would like to talk over with a physician of the University Health Service?

Questionnaire used at the University of Minnesota to determine the need of mental hygiene among freshmen.

Probably the greatest difficulty is that of getting in contact with the "needy" student before pernicious adaptations have developed. For, when once developed, such adaptations may be a handicap, not only in college but also in later life.

METHOD EMPLOYED

During the last year at the University of Minnesota, an attempt was made to estimate the percentage of freshmen in need of mental hygiene, and to determine the value of a psychoneurotic history in recognizing this need. At the time of registration, entering freshmen were requested to fill out a brief history dealing with their own and their families' neurotic tendencies, as shown in the accompanying questionnaire. This was in addition to the regular history required by the students' health service. These "additional histories" were filled out by 2,295 students, of whom 595 were girls. As far as practical, this was done under direction.

It was recognized that this "additional history" was open to criticism, particularly that question in which the student was requested to underline those characteristics which were descriptive of his mental make-up. It is highly probable that many persons, particularly of this age, do not have a sufficiently clear insight into their own make-up to answer correctly such a question, but this method of attacking the problem was thought worthy of a trial.

TABLE 1.—*Analysis of Students Whose Histories Suggested Need of Help*

	Boys	Girls	Total
Students who filled out "additional history"...	1,700	595	2,295
Students who therein expressed a desire to consult a physician.....	262	31	293
Students requested to come in for interview:			
(*a*) Because of a suggestive history (of these 69 boys and 12 girls also expressed a desire to consult a physician).....	178	66	244
(*b*) Because of expressing a desire to consult a physician without stating that it was about some physical condition*.....	14	6	20
Students interviewed:			
Total	192	72	264

* A large majority of those who expressed a desire to consult a physician stated that they wished advice concerning some physical condition, and so were referred directly to the proper specialist.

Each of these "additional histories" was reviewed, and those students whose histories suggested that they might need help were requested by letter to report for a personal interview. No hard and fast rules were followed in the selection of these students, but letters were sent, for example, to those who stammered, had dreads, fears, night terrors and the like, and to those who underlined such words as fits of blues, self conscious, unsocial, secretive, day dreamer, unduly sensitive, etc.

TABLE 2.—*Number of Students Interviewed*

	Boys	Girls	Total
(*c*) In response to letter from Group a, Table 1..	128	37	165
(*d*) In response to letter from Group b, Table 1..	12	5	17
(*e*) Referred by advisers, deans, etc.*.....	6	2	8
Total	146	44	190

*A few other students were also referred in, but are included in Group *c* on account of suggestive neurotic histories.

Table 1 shows the results of the analysis of these histories.

Of this number, 68 per cent. reported and were interviewed (Table 2).

CLASSIFICATIONS USED

On the analysis of their histories alone, these students, who were requested to report for interview, were divided into three groups:

1. Those whose histories indicated a distinct need for mental hygiene.
2. Those whose histories were quite suggestive of such a need.
3. Those whose histories were somewhat suggestive.

After all the students who reported had been interviewed, they were reclassified as follows:

A. Those students who were in need of advice or help.

B. Those students who had real problems but were apparently making a satisfactory adjustment.

C. Those who were apparently normal.

This reclassification is shown in Chart 1.[7] This chart would indicate a definite relationship between a suggestive neurotic history and an actual need for mental hygiene, in that, as the histories become less suggestive, there is a progressive decrease of the A, or maladjusted group, and a corresponding increase in the C, or so-called normal group. Among the boys, 52 per cent. of the cases in Group 1, 43 per cent. of Group 2 and 36 per cent. of Group 3 were reclassified as A's. This same relationship is evident in those students who were interviewed because they stated that they wished to consult a physician, the C group being markedly larger when the history was not suggestive of mental hygiene needs. The A and B divisions together represent from

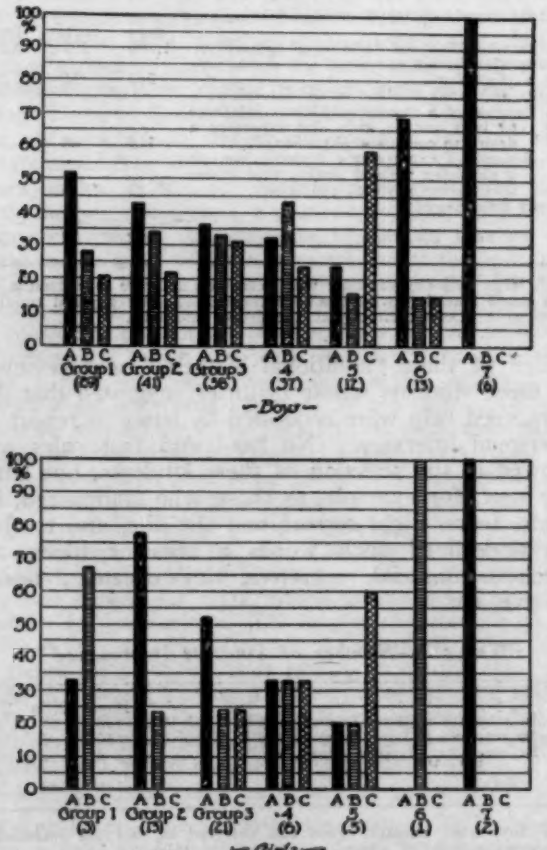

Chart 1.—Relationship of need for mental hygiene to a suggestive neurotic history: Conclusions from history: Group 1, probable need of help; Group 2, quite suggestive of need of help; Group 3, somewhat suggestive of need of help; Group 4, desired consultation with suggestive history; Group 5, desired consultation without suggestive history; Group 6, desired consultation for neuropsychiatric complaint; Group 7, referred in. Conclusions from consultation: *A*, actual need of help; *B*, with real problems but adjusting selves; *C*, probably normal.

70 to 85 per cent. of every group in which the histories were suggestive.

According to this study, 3.5 per cent. of the boys and 4 per cent. of the girls in the freshman class are in need of mental hygiene. In addition, 2.6 per cent. of the boys and 1.9 per cent. of the girls have real problems, but are apparently making satisfactory adjustments. These figures are extremely conservative, and probably underestimate the number of freshmen needing instruction in mental hygiene.

7. In these charts, as in those that follow, the value of the statistics as shown for the girls is to be questioned, as the numbers are small.

VALUE OF FAMILY HISTORY

The significance of a poor family history is illustrated in Chart 2.

The percentage of psychoneurotic or psychotic difficulty in the immediate family was two and one-half times as great among the boys of Group A as among the boys of the whole freshman class. Among the girls, this was three times as great. In both sexes, the percentage of the B group who gave a similar history is also greater than the percentage for the total class. Nervous troubles in the grandparents or more distant relatives do not appear to be so significant.

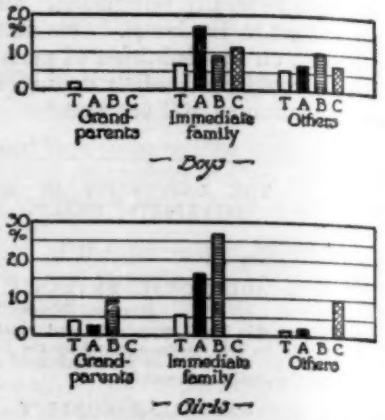

Chart 2.—Relationship of need for mental hygiene to a neurotic family history: *T*, class total. Conclusions from consultation: *A*, actual need of help; *B*, with real problems but adjusting selves; *C*, probably normal.

VALUE OF PERSONAL HISTORY

Of the entire group of 2,295, 11 per cent. of the girls and 17.8 per cent. of the boys gave a history of one or more of the following disorders: convulsions, night terrors, nervous prostration, chorea, stammering, hysterical attacks, migraine, severe injuries (particularly to head) and fears or dreads. This corresponds closely to Cobb's report on the neuropsychiatric examination of 1,141 college students.[8]

TABLE 3.—*Characteristics of 2,295 Students as Given by Themselves*

Boys	Per Cent.	Girls	Per Cent.
Sociable	45.4	Sociable	47.0
Optimistic	36.1	Optimistic	40.5
Lively	31.2	Lively	35.7
Quiet	23.9	Self conscious	28.5
Self conscious	19.5	Worry easily	27.8
Talkative	18.3	Talkative	27.3
Changeable	16.3	Quiet	20.5
Worry easily	13.1	Difficult to make decisions	18.6
Difficult to make decisions	12.8	Changeable	16.9
Bashful	7.9	Unduly sensitive	14.7
Pushing	7.3	Retiring	10.2
Retiring	6.8	Fits of blues	7.7
Lack of persistence, concentration and application	6.5	Easily discouraged	7.7
Unduly sensitive	6.2	Lack of persistence, concentration and application	6.9
Easily misunderstood	5.8	Shy	5.3
Shy	5.3	Day dreamer	5.3
Irritable	4.8	Easily misunderstood	4.7
Fits of blues	4.6	Irritable	4.2
Day dreamer	4.3	Emotionally unstable (either up or down)	4.0
Easily discouraged	3.9	Secretive	3.9
Lack of usual interest in the opposite sex	3.7	Lack of usual interest in the opposite sex	3.6
Domineering	2.1	Domineering	3.0
Secretive	2.1	Bashful	3.0
Exceptionally religious	2.0	Pushing	2.1
Unsocial	1.8	Exceptionally religious	1.9
Feeling of being discriminated against	1.8	Seclusive	1.6
Suspicious	1.5	Suspicious	1.5
Seclusive	1.4	Feeling of being discriminated against	1.1
Gloomy	1.3	Gloomy	1.0
Emotionally unstable (either up or down)	1.2	Unsocial	1.0
Distrustful	0.4	Distrustful	0.5

When we come to compare the A and B groups with the total large group, the significance of such disorders becomes still more accentuated (Chart 3).

The percentage of boys in Group A who gave a history of only one of these disorders was nearly twice

8. Cobb, Stanley: A Report on the Brief Neuropsychiatric Examination of 1,141 Students, J. Indust. Hyg. 3: 311 (Feb.) 1922.

as large as the percentage for the total group of boys; the percentage of girls was eight times that of their total group. The percentage of both boys and girls who gave a history of two or more of these disorders was more than five times as great for Group A as for the entire class. The B group shows the same relationship, but this is not quite so marked as that of the A group.

It is interesting to note that the whole group of 2,295 students underlined their characteristics in the order of frequency shown in Table 3.

Boys and girls appear to be equally shy and equally to lack persistence, application and concentration, but only one in every fifteen or twenty so described themselves. The percentage of boys who are bashful is twice that of the girls, while there is a higher percentage of the girls who are more self conscious, more talkative, worry more easily, find it more difficult to make up their minds and are unduly sensitive, all of which would appear to be in accordance with popular opinion.

SOURCES OF ERROR

In considering the significance of these replies, several possible sources of error must be borne in mind. Doubtless, some answers are inaccurate either because of an insufficient self knowledge, which was particularly true of the younger students, or because of misinterpretation of the meaning of certain terms. "Easily misunderstood," for example, was later defined by a number of students as meaning difficulty in clearly expressing themselves.

Charts 4 and 5 show the relative percentages of the different groups underlining various characteristics. In spite of possible inaccuracies, there is, in most instances, a distinct difference between the entire group and those in need of mental hygiene. This difference, almost without exception, is in the direction that one would expect it to be, when the difference in make-up between the psychoneurotic and the normal is considered.

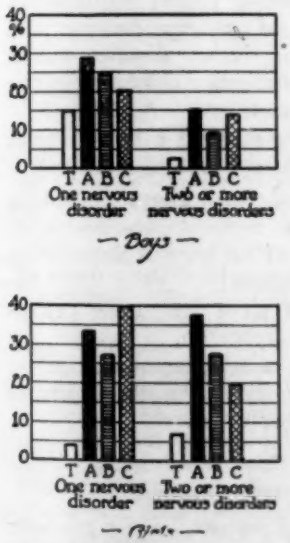

Chart 3.—Relationship of need for mental hygiene to nervous disorders: *T*, class total. Conclusions from consultation: *A*, actual need of help; *B*, with real problems, but adjusting selves; *C*, probably normal.

In quite a number of these charts, the percentage of the C or supposedly normal group is much greater than that of the total group. This runs fairly evenly in the same characteristics in both sexes. It is probable that some of these C cases are either actual or potential A or B cases. Owing to the limited time available, many of these students could not be as thoroughly studied as was desired. Undoubtedly, if facilities had been available to inquire more thoroughly into these students' campus and home lives, a number would have been placed in the A or B rather than in the C grouping. This actually did occur in a few cases on further investigation. The same statement would also apply to the B group, who were thought to be making a satisfactory adjustment to their problems.

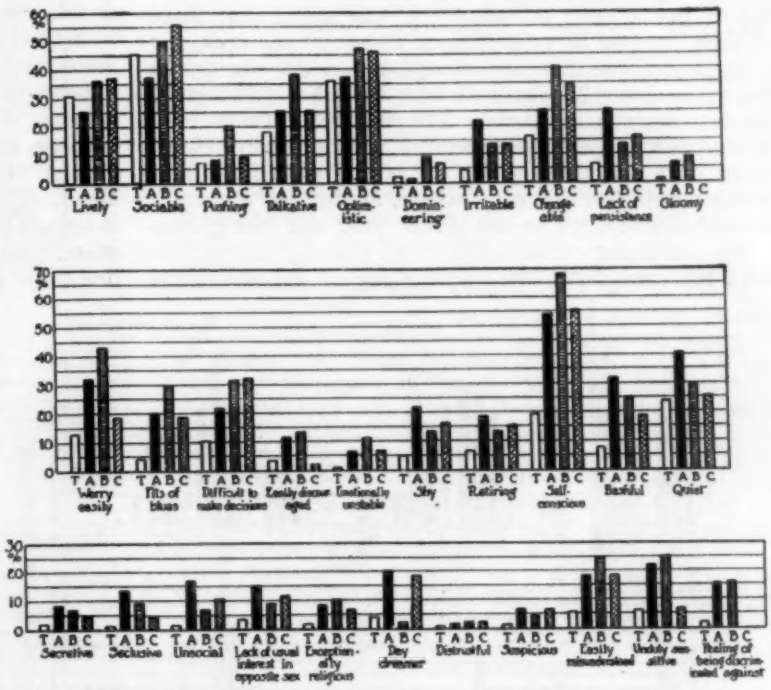

Chart 4.—Relationship of need for mental hygiene to individual characteristics: boys.

It is impossible to draw any conclusions from single characteristics, but the significance of some of the undesirable characteristics cannot be entirely neglected when it is considered that among those boys underlining irritable, gloomy, easily discouraged, bashful, quiet, secretive, seclusive, unduly sensitive and feeling of being discriminated against, the A group is the largest, the B group is next, and the C group more nearly approaches the average for the class.

Among the girls, the same relationship of the A, B and C groups is found under the headings of domineering, easily discouraged, shy, retiring, self conscious, bashful, lack of usual interest in the opposite sex, day dreamer, unduly sensitive and a feeling of being discriminated against.

It was common to find that maladjusted students underlined a number of such undesirable characteristics, and occasionally nearly all of those suggestive of a praecox or paranoid make-up would be checked.

PSYCHOLOGIC RATING

Apparently there is no correlation between the psychologic rating and the need of mental hygiene as determined by this study. As a group, maladjusted students ranked as high as those needing no help.

Fifty-six per cent. of the boys in the A group, 67 per cent. in the B group and 50 per cent. in the C group fell in the upper half of the class, while 63 per cent. in the A group of girls, 60 per cent. in the B group and 67 per cent. in the C group were above the class average according to their psychologic rating.[9]

9. Psychologic ratings were furnished by Dr. D. G. Patterson of the Department of Psychology, University of Minnesota. Only students of the College of Science, Literature and Arts were given psychologic tests.

IMPORTANCE OF AGE

These freshmen varied in age from 13 years to 36 years (except for one of 39 and one of 60 years) but the vast majority, 2,113, were between the ages of 16 and 24.

In comparing the reliability of the history with the age of the student (Chart 6), it was found that there was an increase in reliability of about 10 per cent. for every additional 2 years of age up to 25 years. In the group over 25 years of age, both boys and girls, the history was apparently less reliable, but this may be accounted for by the limited number interviewed, seven boys and three girls. Boys and girls run practically parallel in this comparison, except for an unexplained discrepancy in the 16-17 year old girl group.

No particular relationship was found between the need for mental hygiene and the age of the individual

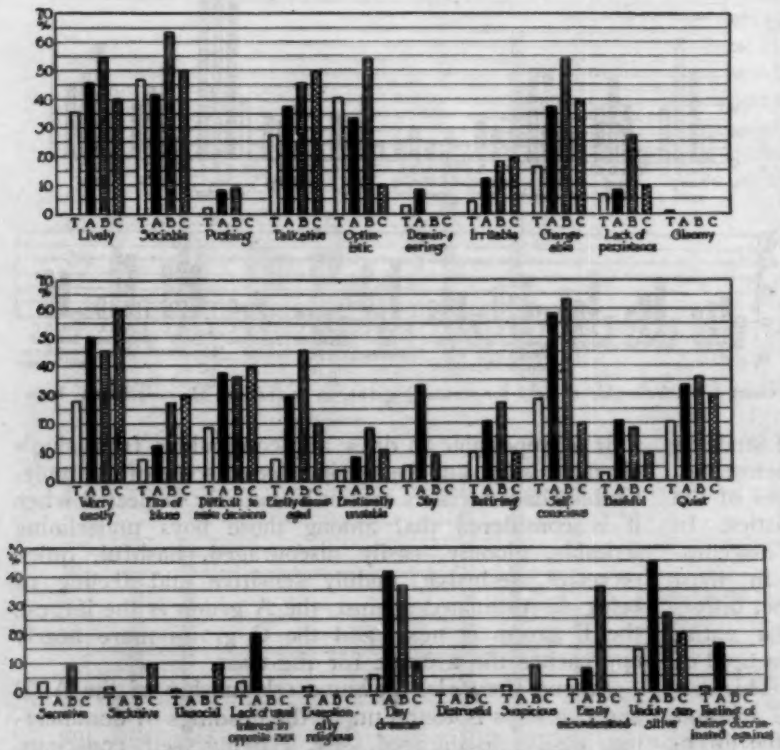

Chart 5.—Relationship of need for mental hygiene to individual characteristics: girls.

except that the percentage of those needing help, both boys and girls, was a little higher at the ages of 22 to 25 years than at other ages (Chart 7).

PHYSICAL FINDINGS

Chart 8 shows no relationship between the need for mental hygiene and such physical defects as nasal obstruction, goiter and low reaction to exercise. Defective vision, pathologic tonsils and low vital capacity are a little more common in both the A and B groups than in the average for the class. Albuminuria and deafness, however, are markedly above the average in both A and B groups. Lung defects, functional heart conditions and hypertension are prominent only in the A group. These findings are somewhat contrary to the findings of others who state that there is no relationship between nervous and physical defects except for tachycardia, increased reflexes and vasomotor phenomena.[9] In this study, the albuminuria, cardiac defects and hypertension might be explained on a psychoneurotic basis, while lung defects, defective vision, deafness and pathologic tonsils might be etiologic factors in the development of some nervous condition.

SIZE OF HOME COMMUNITY

The need for mental hygiene was found to be particularly frequent among boys who had been raised in villages (Chart 9). This corresponds to the findings, in a recent survey, that histories of nervous breakdown were given most frequently (2 per cent.) by boys from villages of from 50 to 1,000 population.[10] The greater number of girls, on the other hand, needing mental hygiene came from towns (from 1,000 to 5,000 population) or small cities (from 5,000 to 50,000 population). Changing from a smaller community, where one is known and has one's friends and family, to the much more complicated university life in a large city, where one must adjust oneself to many new situations, must make new friends and must again build up, probably with much greater competition, one's reputation as a student, athlete or good fellow is a serious affair, and it is not difficult to understand how some of these students develop inferiority complexes or defensive reactions which, if not properly handled, may severely handicap them both in their university and in their later life. However, this does not explain why the students coming from the rural districts (less than fifty population) have less need, relatively, for mental hygiene, and no explanation for this is offered.

CONCLUSIONS

1. Relatively few universities are attempting mental hygiene in any organized manner.
2. There are at least 3.5 per cent. and probably a larger number of freshmen who need advice in making proper adjustments.
3. Some form of history dealing with neurotic tendencies is of distinct aid in searching out students needing mental hygiene.
4. The reliability of such a history tends to increase with the age of the student.
5. Students need help about equally at all ages.
6. Psychologic ratings are of no help in determining students who need mental hygiene.
7. Various physical defects were frequently present in the maladjusted group of freshmen.
8. Students coming from smaller communities are more apt to need mental hygiene than those already accustomed to the life of larger cities.

ABSTRACT OF DISCUSSION

Dr. Walter F. Schaller, San Francisco: Every practicing neuropsychiatrist must have had experience in cases of nervous and mental breakdown occurring in students. If I am right in the assumption that these case histories were more or less voluntary contributions, it occurs to me that, possibly, we are missing an undue proportion of that class of case that we may call the timid, shut-in type, the potential praecox. And I wonder whether an approach might not be established through help from the teachers as well as from the students. One group appeared to show an unduly high incidence of

10. Sheppard, W. P., and Diehl, H. S.: Rural and Urban Health, J. A. M. A. 83: 1117 (Oct. 11) 1924.

breakdown in those who reacted poorly to physical exercise. If the gymnastic instructors would report on such cases, this might be helpful.

DR. WILLIAM A. JONES, Minneapolis: Dr. Morrison has done very good work. This study has been going on for two

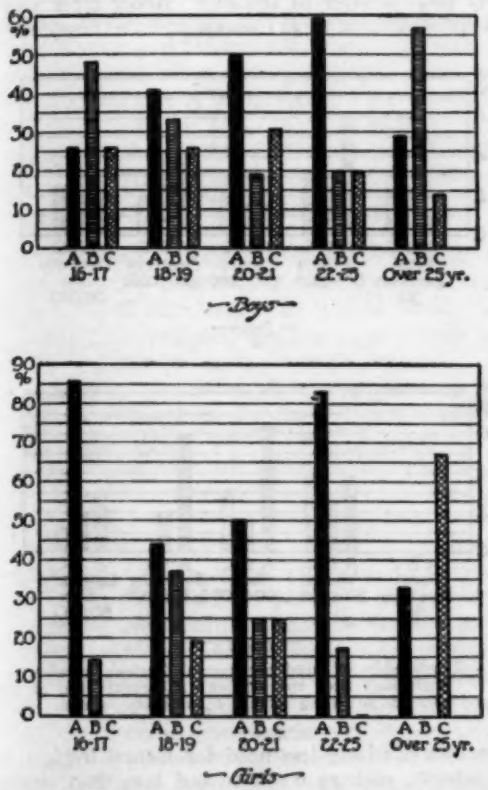

Chart 6.—Reliability of history in various age groups: Conclusions from consultation: *A*, actual need of help; *B*, with real problems; *C*, probably normal.

or three years. The effort seems to be a very determined one to get at the basic principles in the life of the individual, and ought to be of great help to physicians in the future, and certainly a greater help to university authorities and teachers.

DR. KARL A. MENNINGER, Topeka, Kan.: I have been interested in Dr. Morrison's work for several years, and am attempting similar work in a smaller school, Washburn College, at Topeka. Our efforts are correlated with individual work similar to that outlined by Dr. Morrison. We do not have so much material; however, we have opportunity for certain personal contacts probably not available in university work. That is simply a matter of variation in technic which is not of great importance. What is of importance is the fact that such work as this is being done. The bulletin of the Association of College Professors recently listed and outlined all the various initiatory courses given in colleges in the United States. It is now the practice in all the better schools to give the freshmen a required course introducing them in a didactic way, shall I say, in a cursory manner, to the change in view that they are about to experience; that is, they introduce the students, as it were, to the facts of college and to the change in their general status externally (socially) and internally (psychologically). The psychiatrists have a definite responsibility, in that they should see that some sort of mental hygiene principles should be inculcated in these initiatory courses. The initiatory courses now existing have a great deal to say about such questions as the relation of chemistry to history, but nothing to say as to how a student is to be helped in getting along with his roommate. And for that reason I think that psychiatrists, with what should be a superior knowledge of these problems, should contribute what they can, assuming this responsibility that Dr. Morrison has indicated.

DR. LESSER KAUFFMAN, Buffalo: All of us who are teachers in medical schools have had the experience of having a number of students break down during the year, not only in the freshman year, but in the sophomore, junior and senior years as well. When psychologic tests are practically negative, if, in addition, proper examination were made from a mental hygiene standpoint, I think that we could probably eliminate from the university not only undesirable students who are just entering medical school, but also those in the other departments. During several years of observation, I have noted that some of the men who break down are of inferior constitutional trend; they are also the ones who make the poor physicians, who eventually prove unfitted for the life work they have chosen. These incompetents should be eliminated at the very entrance into our colleges and universities, and not let wait until they are about to graduate.

DR. MILTON B. LENNON, San Francisco: We have been doing some work similar to this in the University of California, under the supervision of Dr. Eva Reid. Not all students were consulted in the superior way practiced in the University of Minnesota. Some students offer themselves for examination. They have been advised of the value of mental hygiene; others are selected by the teachers, or by the dean of women. While our statistics are small, at least a beginning has been made in that direction. We feel that a psychologic examination should be made of every freshman student. The University of California has a great many students, and the expense of educating so large a number is enormous, particularly students in the medical department. And if those who are unfit for training are weeded out early, there would be a great saving to the state, and a great saving of effort on the part of teachers. Within the last seven or eight years, certain students who reached their junior year were classified as morons. They had finished high school, taken the required premedical work and two years of university work. During all that time they met the requirements, but when it came to making a diagnosis of their capacity for thinking, it was found that they could not think. They were hard working students and were able to memorize well, but they were not able to think. These cases illustrate the value of this type of work.

DR. MEYER SOLOMON, Chicago: This work is especially significant because of the fact that it is merely preliminary to what should follow after selecting the individuals who themselves are aware of certain defects and handicaps and are endeavoring to straighten them out and get set in the

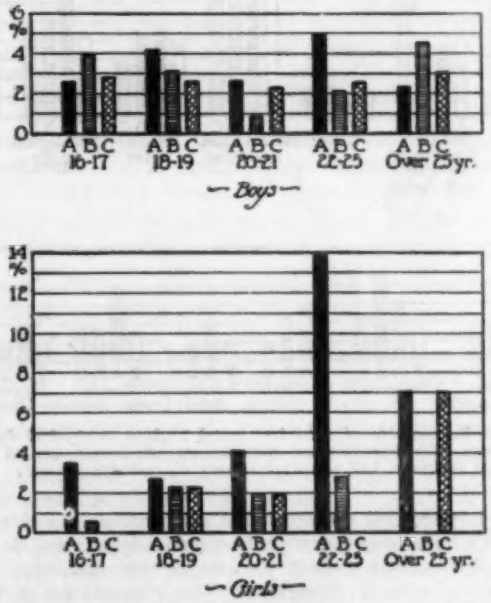

Chart 7.—Relationship of need for mental hygiene to age: Conclusions from consultation: *A*, actual need of help; *B*, with real problems, but adjusting selves; *C*, probably normal.

right direction from the prophylactic standpoint. Just as the ordinary educated individual before puberty, and surely at puberty and during the adolescent period, nowadays has a fair knowledge of ordinary physical hygiene, so also I believe

that the average girl and boy during the period of puberty and in the adolescent stage should be given a common sense self-knowledge and understanding of the great upheavals that are going on within the body and mind, with an insight into the harmful emotional tendencies and the wrong ways of handling themselves that are apt to crop out, and methods of correction or substitution. Therefore, in addition to the physician individualizing in each case of definite defect that presents itself to him, there should be instituted a course of training in self-knowledge, self-understanding and self-direction, giving with it a common sense philosophy and advice as to the proper ways of facing life. And each individual should receive this during the age of adolescence and puberty. If the average boy and the average girl do not get such training at the university and in the home, the most fundamental part of education is lacking, no matter how retentive their memory, no matter how many subjects they may know or how great the photographic qualities of mind they may develop. From the standpoint of real prophylactic mental hygiene, this work should precede and be combined with such a course. As universities are giving courses in all sorts of subjects that mean nothing to the future well being and happiness of the average individal, it seems to me it would not require much effort through propaganda both to initiate such a course, given by a neuropsychiatrist. Proper precautions can be taken to prevent morbid introspection and self analysis, if the matter is handled in a wholesome, constructive fashion.

DR. ANGUS W. MORRISON, Minneapolis: As already stated, this work is only preliminary. The method employed in attacking the problem is open to criticism, particularly as regards certain parts of the history, but it is hoped that this can be improved on next year. Of course, the ideal method would be a personal interview with every student entering college. As such an interview takes considerable time, it would be impossible to examine every individual in a class of 2,500 or 3,000 students by the end of the freshman year; so an attempt was made to find a method whereby at least a portion of the freshmen in need of mental hygiene could be picked out and personally interviewed. The students who are referred by the dean and faculty advisers or who are "picked up" are more pronounced types of cases, and they furnish

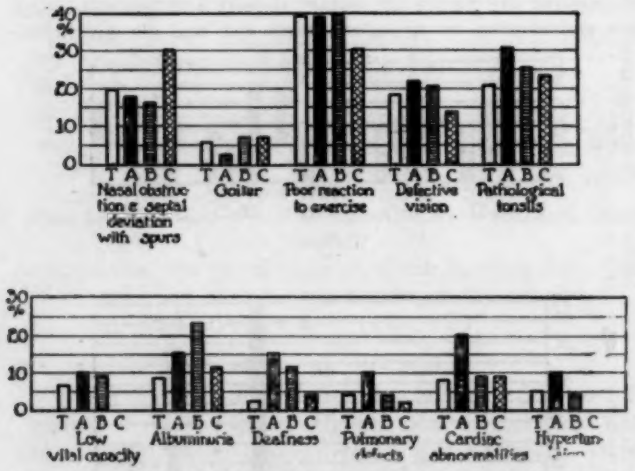

Chart 8.—Relationship of need for mental hygiene to physical defects: *T*, class total. Conclusions from consultation: *A*, actual need of help; *B*, with real problems, but adjusting selves; *C*, probably normal.

some very interesting problems that often require considerable study. We have been particularly interested in trying to help the so-called normal student who needs some guidance or a few words of advice. Sometimes these students get it from their classmates or teachers, but often they do not discuss their minor problems either because they are ashamed or for some other reason. It is such students that we are attempting particularly to interview, that they may receive advice in making proper mental adjustments. There is no relationship between reaction to exercise and mental hygiene needs of freshmen students. These students, as a whole, apparently react as well to exercise as does the average student. Therefore, on this basis alone I do not believe that the physical director would be of much help in picking out such cases. We considered giving a few lectures to the freshmen, but we feared that we would be overwhelmed with requests for advice. Our organization was so limited that we could see only a comparatively small number of students. About three years ago, I sent a questionnaire to 350 deans, and the responses stated

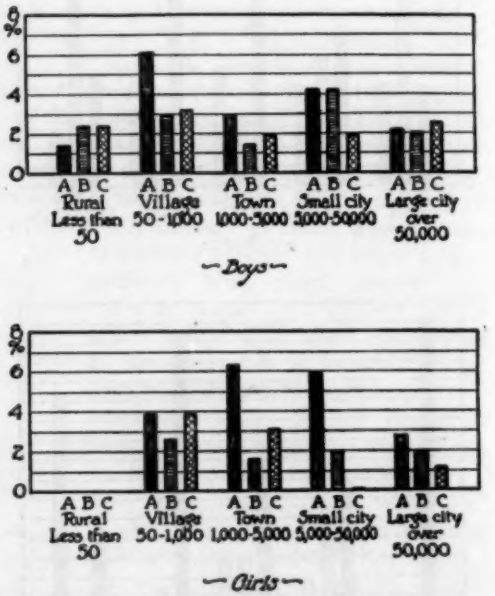

Chart 9.—Relationship of need for mental hygiene to size of home community: Conclusions from consultation: *A*, actual need of help; *B*, with real problems but adjusting selves; *C*, probably normal.

that there was relatively less need for mental hygiene in the graduate schools, such as medicine and law, than among the undergraduates. Many of these graduate students have either made an adjustment or possibly have dropped out of college.

UNUSUAL FORMS OF PAIN IN THE AREA OF THE FIFTH NERVE *

HARRY L. PARKER, M.B. (U. DUBL.)
ROCHESTER, MINN.

Aches, pains and unpleasant sensations are common enough in the structures supplied by the fifth cranial nerve. No manifest cause can be discovered for the complaints of a certain group of patients, even when the painful area has been examined by the best methods known to modern science. The area lies in the domain studied by the ophthalmologist, otorhinologist, stomatologist and other allied scientists. The patient is frequently referred to the neurologist for a final opinion when neither investigation nor treatment has succeeded in satisfactorily explaining the cause of the pain. Often the condition may be diagnosed "neuralgia" or "neurosis," and the neurologist must explain the situation and treat the patient, a complex problem and worthy of a free discussion, for many such cases are extraordinarily difficult to interpret, and the classification in use is vague and obscure, and not based on accurate scientific foundation.

It is my intention here to attempt to distinguish a few of the foregoing types of cases commonly seen in a large clinic. Unfortunately, these can be only a few, for

* From the Section on Neurology, Mayo Clinic.
* Read before the Section on Stomatology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

there remains a vast collection of pains, aches, paresthesias and disagreeable sensations for which no explanation has been discovered.

Certain pain syndromes are so stereotyped in character, so constant as to symptoms, and so similar as to course, that one must inevitably recognize a definite disease entity, even though the underlying lesion is not known. Paroxysmal trigeminal neuralgia comes under this category, and after seeing a great many patients with this disease, one is impressed by the relative sameness of their complaints. It is becoming generally recognized that the disease is distinct and invariable in character, and can be readily diagnosed with only the patient's story and his reaction to the pain as evidence. If the patient is intelligent, the nature of the complaint need not be doubtful, especially if the patient is seen during an attack. Frazier,[1] in a study of 750 patients, has demonstrated once more the salient features of the disease, and differentiated it clearly, concisely and for all time from other pains in the same area.

The fact that no satisfactory explanation from a pathologic standpoint is forthcoming for paroxysmal trigeminal neuralgia makes no difference in the unswerving constancy of the disease picture. Any change from this syndrome should make the observer suspicious as to whether or not the patient's complaint is true paroxysmal trigeminal neuralgia. Mistakes are easily made; and, since recent advances in surgery have given us means to relieve the pain, the wish being father to the thought, the treatment may be applied to various other conditions closely resembling it. The complete failure to cure in such a case demonstrates the fundamental nature of the disease. Paroxysmal trigeminal neuralgia seems to be a specific disease demanding a specific form of treatment; it allows of no deviation from the characteristics which have been defined by so many prominent authors. Among 300 patients who had received major operations, Frazier quoted data concerning nineteen who were not thereby relieved from pain, and even in these few he regards the condition as in some way atypical. Such terms as "atypical trigeminal neuralgia" have been used, but there is seemingly no scientific reason for adopting so misleading a nomenclature; a patient has either the true paroxysmal trigeminal neuralgia, or he has some other completely different disease with a correspondingly different method of treatment. Conservatism here is the essential feature to the successful application of the surgical discoveries of recent years.

The disease entity called migraine is much more common than paroxysmal trigeminal neuralgia; its etiology is uncertain, yet it is so common and has so many constant features that it can quite properly be classified under one common name. Perhaps the most conservative of criteria in making the diagnosis would be the hereditary character, the onset early in life, the periodicity of attacks, and the lengthy course over the major portion of a patient's lifetime without, at any time, evidence of structural alteration of the tissues.

While the more common manifestation of migraine is in the form of a headache diffusely spread over a wide area of the cranium, it is not unusual for it to spread also into the area supplied by the second and third division of the fifth nerve; more than that, it may be confined to one small area in this part of the distribution of the nerve. It is universally recognized that a common site for the pain of migraine may be the orbit or temple; that it may be felt in the jaws, teeth or tongue is not so commonly recognized. This has been called neuralgic migraine, but the only difference from other types lies in the area involved. Other manifestations, such as scotoma, nausea, vomiting and prostration, may be present, as in the usual hemicrania. It is not unusual for attacks to become more frequent and more intense during the fourth and fifth decades of life, and during this time the pain may change gradually from a diffuse hemicrania to pain in a small localized area in any part of the distribution of the fifth nerve. Without the previous history of "lifelong sick headaches," mistakes may be made in the interpretation of what the patient insists is a recently acquired condition. As to the attack, it may be recognized by its periodicity, slow onset, and increasing intensity to a climax, later diminishing and finally passing off during a twelve or twenty-four hour period. The pain, throbbing in character, is usually felt deep in the tissues, and is intensified by stooping, coughing, or straining at stool; it may have no relation to the margins of supply by the fifth nerve in its various divisions. Case 1 illustrates some of the features mentioned.

ILLUSTRATIVE CASES

CASE 1.—*Migraine attacks with pain in the upper jaw during the course of severe periodic headaches.* A woman, aged 30, came to the Mayo Clinic, Feb. 25, 1924, complaining of headaches and neuralgia. Since the age of 19 years, she had had attacks of severe throbbing pain in the right frontal region, orbit and right superior maxilla, coming on once a month with the onset of menstruation and associated with photophobia, nausea, vomiting and prostration. The attacks usually lasted for from twenty-four to forty-eight hours, and finally passed off during sleep. The patient remained in bed for two or three days each month. Besides the monthly headaches and pain in the jaw, she had milder pains between attacks in the right or left side of her face, upper jaws and teeth, of from two to four hours' duration. Several punctures of her right maxillary sinus failed to reveal evidence of disease, and afforded no relief. Her father and one sister had severe periodic headaches.

Physical examination revealed no definite lesion, and search for pathologic conditions in the nose, sinuses, teeth and cranium were uniformly negative. Cocainization of the nasal mucous membrane during an attack gave no relief.

While periodicity is characteristic of migraine, exhaustion, worry, debilitating diseases or environmental stress may change a periodic pain into a continuous one. Always, however, there will be a history of previous periodic attacks.

CASE 2.—*Migraine attacks characterized by general headache or localized pain in an area of the second division of the fifth nerve. Constant pain following exhaustion.* A woman, aged 35, came to the clinic, May 3, 1923, complaining of pain in the upper jaw. Her mother had had sick headaches all her life. The patient had never been strong physically, and since the establishment of menses she had had severe bitemporal throbbing headaches during and between menstruation periods, with photophobia, nausea and prostration. The menstrual periods had always been painful, and she usually was in bed for three or four days each month, because of menstrual pain or of sick headache. At first the headaches were confined to the temples, but two years after their appearance, and for at least twenty years, the headaches had been associated with pain in the upper jaw, gums and teeth, worse on the left side. Later, periodic attacks of pain were confined to the upper jaw without the usual headache and alternating with the usual attacks of migraine. Five years before examination, during a period of nervous exhaustion due to overwork, the pain in the jaw became constant. At this time, treatment was directed to the teeth and maxillary sinuses. Three left

1. Frazier, C. H., and Russell, Ethel C.: Neuralgia of the Face: An Analysis of Seven Hundred and Fifty-Four Cases with Relation to Pain and Other Sensory Phenomena Before and After Operation, Arch. Neurol. & Psychiat. **11**: 557-563 (May) 1924.

upper molar teeth were removed, and the maxillary sinus was punctured and drained without relief.

The patient was a thin, undernourished, nervous girl of asthenic type and build. She described the pain in the upper jaw as a drawing, pulling, pressing ache, worse during periods of exhaustion, anxiety or worry, and over and above this constant sensation she still had periodic sick headaches with increase of pain in the upper jaw during each attack. No manifest disease was found around the upper jaws or teeth, and cocainization of the nasal mucous membrane had no influence on the pain.

Case 2 is a rather common type in which the pain in one or both upper jaws may be felt more or less constantly by an overworked migrainous, asthenic girl. Dysmenorrhea, constipation and physical inferiority are usually part of the picture, and rest and tonic measures seem to have more influence in the treatment than does any local procedure directed to the chief site of complaint.

With a sharply localized pain in the area of the fifth nerve, there must always be a temptation to attempt to cure it by abolition of the functions of the nerve. It is argued that with anesthesia there can be no pain, and that the patient will not suffer from having an anesthetic area in place of the original dolorous one. While this is eminently suitable treatment for paroxysmal trigeminal neuralgia, it is quite the reverse for migraine. In such cases, patients react violently to any operation on the peripheral branches of the nerve or its posterior root, and complain that their pain not only continues after complete anesthesia is produced, but that there is also a riot of unpleasant sensations in the area, which is found by examination to be completely anesthetic. There is marked nervous exhaustion, anxiety and mental depression, which tends to be more or less permanent.

Case 3.—*Neuralgic migraine unrelieved by multiple sinus operations and section of the posterior root of the fifth nerve.* A man, aged 54, came to the clinic, Oct. 1, 1923, complaining of pain in the right side of the face. His mother had had severe sick headaches all her life, and the patient himself, from the age of 20, had suffered from frontal and occipital headaches about once a week, usually beginning in the morning and lasting twenty-four hours. These were not associated with scotoma or vomiting, but there was definite nausea during the attack. Four years before, the headaches had become more severe and frequent, gradually becoming localized to the right supra-orbital ridge and behind the right eyeball; this pain seemed to replace the former headaches. A submucous resection had been performed elsewhere to relieve the supra-orbital pain, but it was made worse. Six other operations were performed on the nasal sinuses of the right side, but the patient became worse after each operation, and in May, 1923, the pain was present day and night. A resection of the posterior root of the right fifth nerve was then performed. The surgeon reported finding a thickened dura over the ganglion. Immediately after operation, the patient had the sensation of his teeth being crowded, and the numbness usual after section of the posterior root of the fifth nerve. These sensations accompanied the pain in the right supra-orbital region, which remained the same, or was even more severe. In a month it had spread over the whole area of the fifth nerve.

When the patient was examined in the Mayo Clinic, he complained of severe, continuous, prickling, bursting pain in the right side of the face. He said that he felt as if his scalp was being torn off and his skull crushed in. Every time he mentioned the sensation, he had a new adjective for it. Pain in the left side of the mouth and alveolar margin was infrequent. Morphin had been taken to induce sleep. The patient believed that his condition was worse in every way than ever before. He was unkempt, irritable and emotional, and looked the picture of utter misery. There was complete cessation of function in the right fifth nerve, with abolition of sensation and motor power.

The association of migraine and paroxysmal trigeminal neuralgia is commonly noted. Patrick [2] demonstrated that a high percentage of his patients had suffered from migraine, and of the 200 whose case records he studied, forty had migraine as well as neuralgia. The two diseases may run a parallel course throughout the long period of the patient's life; but, while alcohol injections or section of the posterior root will relieve trigeminal neuralgia, the migraine goes on steadily to its spontaneous disappearance, at the menopause in women, and at the fifth decade in men. The patients themselves usually differentiate, in their story of their trouble, the sharp, lancinating, paroxysmal pain of neuralgia from the steady, continuous, throbbing pain of migraine.

Elderly patients often present themselves for examination and treatment with a complaint of pain or some other disagreeable sensation in the tongue, cheek, gums or jaw. A number of such patients have had all their teeth extracted, and no local lesion can be demonstrated in the area of which they complain. The gums, alveoli or lateral margins of the tongue are the more common sites of complaint, and rarely is the malady described as a pain, but more often as a burning, drawing, prickling, boring or throbbing sensation. Patients are usually well insistent on the degree of suffering they have experienced, and they may have had a number of local operations, from curettement of the gums to resection of the superior maxilla, in attempts to obtain relief, only to become worse with each new operation. Usually there are the manifest signs of cerebral arteriosclerosis and senility, such as headaches, deafness, vertigo, tinnitus, and mental deterioration in the form of a failing memory and garrulousness. Their whole mind seems concentrated on the one small area complained of, with little or nothing in evidence in the nature of obvious disease. Oppenheim [3] discusses a senile neuralgia which he believes to be due to osseous changes in the edentulous jaw, compressing the nerve endings. Whether or not this is so, resection of the alveolus does not always cure. Glossodynia, another name used by Oppenheim, suggests more or less the same condition in the tongue. There is a burning, prickling sensation of the tongue, unilateral or bilateral, with or without a marked fear of cancer. Usually this disease occurs in elderly women, and whether the sensation is the result of the fear, or the fear is secondary to the sensation, is hard to determine; more likely the sensation comes first, and its interpretation by the patient as early signs of malignant disease is secondary. As to the cause of these unpleasant sensations in senile persons, there is room for much speculation; certainly one should interpret them in terms of the mental and physical state of the patient. Arteriosclerosis and vascular insufficiency affecting the nerve endings seem the most plausible suggestions, but the lesion may be higher in the brain stem, or the symptom may be the first sign of progressive mental deterioration. The same types of sensation are felt in other parts of the body, notably in the extremities of arteriosclerotic patients. Oppenheim has described a senile neuritis with definite signs of impairment of function of the peripheral nerves; in such a case, the lesion is supposed to be thickening, and obstruction of the vasa nervorum with the overgrowth of the connective sheaths of the nerves. Pain or unpleasant sensations in the jaws or tongue may also be the early signs of a senile psychosis with somatic delusions, and it is

2. Patrick, H. T.: The Symptomatology of Trifacial Neuralgia, J. A. M. A. **62**: 1519-1525 (May 16) 1914.
3. Oppenheim, Hermann: Textbook of Nervous Diseases, Edinburgh, O. Schulze & Co., 1911.

common for patients with these disagreeable sensations to develop profound depression. The somatic delusions may be a misinterpretation of a symptom present some time before the delusional state became manifest.

CASE 4.—*The somatic delusions of senility.* A woman, aged 59, came to the clinic, Nov. 13, 1918, complaining of a drawing, pulling sensation in the right upper alveolus. Twelve months before, she had developed a steady ache in the right upper incisors. These were extracted, without relief, and she was given three alcohol injections into the infra-orbital nerve, also without relief. The portion of the alveolus corresponding to the area of pain was then resected, and immediately a pulling, drawing, tightening sensation replaced the pain. The patient had attacks of unconsciousness, followed by rigidity and sleep. Four months before, the infra-orbital nerve had been avulsed without changing the condition, and a second operation on the nerve produced no beneficial effect.

Examination revealed a much scarred alveolus and an area of anesthesia corresponding to the avulsion of the infra-orbital nerve. A diagnosis was made of psychalgia, but the true nature of the complaint was not determined. The patient returned a year later and a residual granuloma on the left upper alveolus was removed, resulting in an increase of symptoms. Her complaints of the unpleasant sensation on the right side of her upper jaw became louder and more persistent day and night. One month later, she again returned, and said that a bug the size of a bean was living in the tissues of her right upper gum. Every operation had secured a piece of it, but no one had found the head of the creature, so that it was always able to grow again. She feared that it might leave her gum, descend to her stomach and devour her entrails. Every one had done his best, but no one had found the head of the devouring insect.

It is difficult to determine when the patient first developed her delusions. They may have been present from the start, hidden and undetected. She was obviously senile, and we made no further attempt to kill the parasite.

To say that a pain exists only in a patient's mind is always begging the question; yet in certain instances one is forced to reach this conclusion, not merely because of lack of local disease to account for the pain, but because of the abundance of positive evidence in favor of some abnormal working of the patient's psychic mechanism. Pain, after all, is a purely subjective phenomenon that indicates a disturbance of function, but this disturbance may be anywhere from the peripheral nerve endings to the higher association areas in the cerebral cortex. The diagnostician must locate the level of the disturbed function.

An intolerable situation in life may be expressed in a variety of ways, of which grief is only one. The stable person with a well balanced psychic cosmos can deal with problems and mental conflicts satisfactorily. They are either repressed out of consciousness and forgotten, or so sublimated that they become converted to a normal and useful activity. The emotional discharge is led into proper channels and dissipated harmlessly, or utilized for some reasonable purpose. There are nevertheless enough unstable persons in this world who are always in trouble, and forever coming out of the proper adjustment to their environment. The troubles and difficulties they so frequently create for themselves are neither suppressed nor sublimated, but converted into an external display of suffering which will draw down sympathy from their colleagues and relieve them from the necessity of facing the harder and more disagreeable duties of life. Pain is not an uncommon medium whereby the hysterical person buys relief, and it may be located in any part of the body. Such a symptom must necessarily be part of psychic disease, and not indicative of local pathologic alterations; and, without a proper understanding of this possibility, an error can be easily made and the significance of the pain go unrecognized. Actually, the problem can be solved only by studying the patient as a whole in relation to his environment and to the events of the past. The most important fact to ascertain is the situation under which the pain made its first appearance, with all the emotional atmosphere that can be reconstructed from the recital of the incident by the sufferer. Such pain may be the product of one isolated emotional experience which the patient wilfully hides or actually forgets.

CASE 5.—*Pain arising from an emotional episode.* A woman, aged 52, came to the clinic, Feb. 9, 1920, complaining of pain in the right lower lip. Two years before, she had had some teeth extracted under nitrous oxid gas. The anesthetist pressed the mask rather roughly on her face, and she complained that it was hurting her lower lip. She was told rather brusquely to keep quiet and go to sleep; this made her furiously angry, and she went under the anesthetic with this emotion dominant. The first thing she thought of, in coming out of the anesthesia, was the sore and bruised lip, but made no complaint. On arriving home from the dentist's, she ran into a domestic squabble. Her husband, because she had been away all day, had become suspicious and accused her of infidelity. From words, they came to blows, and in the tussle her husband shook her and she hit him and broke his straw hat. When the commotion died down, she explained where she had been and just how badly she was feeling. The pain in her lower lip was a rather prominent factor in the reconciliation, and as she made him realize that she was suffering, he became greatly concerned, and from that time on this pain became a common topic in the household. She described the sensation as a bursting fulness that was constant day and night. She was an unstable, emotional and irritable person, with the characteristic hysterical make-up.

A continuously acting process that is intolerable to a patient may produce a mental trauma that is converted into a bodily symptom. This symptom will then be the sign-manual of a series of failures to become properly adjusted to a disagreeable environment.

CASE 6.—*Hysterical pain in the right cheek.* A woman, aged 34, came to the clinic, Jan. 28, 1922, for relief from pain in the right cheek. The first attack had come on seven years before, at 4 a. m., lasting until 11 a. m. Thereafter it had appeared at intervals of from a month to a week, necessitating rest in bed until noon.

The patient described the pain as steady and severe, commencing in front of the right ear and radiating into the right eye and into the right temporal region. Pain was absent during the day, and on occasions when she was away from home, free from work and responsibility. Close questioning elicited the information that the pain always followed coitus. She had been sexually frigid during her entire married life, and only yielded from a sense of duty. When her husband was away from home, the pain ceased. She herself did not realize this association, but believed that disease of the pelvic organs caused the pain, and came to the clinic primarily for pelvic operation. She was emotionally unstable, excitable and voluble, and was disappointed because no attention was directed toward her imagined pelvic disease, and no suggestions made with regard to the removal of the reproductive organs.

No subtle analysis is required here to see the relationship between cause and effect. It took, however, much time and patient questioning to elicit a true story, and the real facts came out only just prior to the patient's hurried departure, when she found the gynecologic operation was not advised. Undoubtedly the unexpressed wish was for removal of the generative organs, and with them all emotional conflicts.

Perhaps the hardest type of disease to understand is that which appears in a patient who has had multiple operations over a long period of time in the attempt to cure an initial disagreeable symptom that increases in intensity with each operation. To trace the patient's history over the various procedures adopted in his case is a tedious and a difficult task, and many times it is impossible to understand just what was the first sign of the present trouble. Too often the story runs, "Ten years ago, an upper molar tooth was extracted; since then there has been continuous trouble in that area." As to the circumstances leading to the extraction, there may be no satisfactory information; but common sense must dictate that there was a complaint that led to the initial procedure, and the consequent career of multiple operations.

Patients who have had many and multiple operations on the face, jaws, tongue and accessory sinuses are seen from time to time at all big centers of medical activity, to which chronic cases drift in the course of time. For want of a better name, the condition of such patients has been classified in the clinic as "the syndrome of multiple operations." While it is obvious that no further surgery can help such patients, the proper interpretation of their complaint and its final cure is by no means simple. Only by an intelligent understanding of the initial step in the unhappy career of such patients is it possible to arrive at any feasible explanation. One must appreciate the patient as a whole, in the psychic, as well as the physical sense, and not as a certain anatomic structure attached to a nondescript lay figure of no practical importance. Most of these patients are extremely neurotic; whether they were always so is a different question. While some of them are undoubtedly inadequate to stand the ordinary strain of life, and so adopt a career of chronic invalidism, this is by no means the case in all. Many such persons are quite capable of carrying out their daily functions in spite of the trouble that so many physicians have tried to relieve. With this type of person, one is tempted to conjecture as to the local disease missed in previous investigations, and to suggest more radical treatment of the areas where the pain is felt. However, one fact, impossible to ignore or overlook, is the extensive mutilation of anatomic structures, with increasing trouble after each procedure; the more such patients are operated on, the worse they become.

Referring to the original symptom that led to the first operation, a relative sparsity of evidence of severe disease will be noted, the complaint being inevitably out of proportion to what was revealed by the first operation. The question of individual sensibility to pain stimulus is a hard one to answer. Unquestionably, this sensitivity varies enormously, and the response of different persons to irritation varies in degree. The threshold of pain stimulus varies from person to person throughout the periods of life. It takes an expert diagnostician to evaluate the intensity of any disagreeable sensation; in order to do this, he must know the person who is feeling the pain. The psychology of a patient is taken more into consideration when a prolonged operation is contemplated, and when milder, though less efficient, treatment is available. The patient is judged as a good or bad operative risk; if, however, the operation is trivial, involving no risk to the patient, such consideration is likely to be neglected, and it is only after a series of unsuccessful operations around the face, jaws or sinuses that the operator realizes he has a distressing problem on his hands. The patient is then called a neurotic, disappears from observation, and solicits aid elsewhere.

The initial complaint may come from a trivial lesion that in a more stable and less sensitive person would be hardly felt. The procedure undertaken for its relief, however, is not so trivial, and may possibly inflict greater trauma on the tissues than the disease which it was intended to cure. This is correspondingly reacted to with increasing intensity for each succeeding operation, until a permanent state of suffering is induced, with fixation of the patient's whole mind and thought on the area where so much was attempted and so little accomplished. Granting the presence of a definite lesion, the treatment should be adjusted to the psychologic standard of the patient, who must be studied as a carrier of disease, and not the whole attention given to the disease itself. Subjective complaint should be compared with objective findings, and the personality of the patient, with his or her reactions to that particular complaint, should not be neglected. If the original operator regarded the area attacked as a thing apart from the patient, the patient, after many experiences, ends by agreeing with him, and each is in error. Case 7 is a rather striking example of such possibilities.

Case 7.—*Multiple operations on the right side of the face, two intracranial operations on the fifth nerve and persistence of symptoms.* A man, aged 54, first came to the clinic, March 31, 1919, complaining of nervousness, and a second time, April 10, 1923, complaining of pain in the right cheek. Twelve years before his second visit, he had had a slight infection and pain in the right upper bicuspid, and the tooth had been extracted. The pain continued for a year, when another dentist opened the gum and found what the patient thought was a piece of gauze. Thereafter, he had attacks of pain lasting two days every two months, and diligently sought for relief. Eight years before examination, a diagnosis of sarcoma of the right antrum was made, and radium was applied, resulting in a severe burn in the right cheek. Five years before, the antrum had been opened; no pus was found, but, *mirabile dictu*, within two weeks there was plenty, and two further operations were performed to clean this up, the pain persisting none the less.

The first time the patient came to the clinic, four years before, he was extremely nervous and apprehensive, and had lost 15 pounds (7 kg.) worrying over a recent urethral discharge contracted in the course of illegitimate intercourse. The discharge had ceased by the time he reached the clinic, and no gonococci were found. He required considerable assurance, but still believed his system to be polluted with venereal disease and that most of his subsequent trouble had been due to this infection. A diagnosis of "sexual neurosis" had been made, and while he had complained of pain in the face, it was not the dominant factor in his mind at this visit. Two and one-half years before the present examination, the pain had spread to the whole right superior maxilla, and avulsion of the right infra-orbital nerve was performed, which made the scar of the radium burn anesthestic in an area 3 cm. in diameter on the right cheek. Several months later, the pain persisting, alcohol injections were given, and finally two years before, an attempt was made to cut the posterior root of the gasserian ganglion. Subsequent examination revealed that on this occasion the motor root alone had been severed, with resultant paralysis of the right masseter, pterygoid and temporal muscles, and no more anesthesia was produced than had been present hitherto. Eighteen months before, the pain had spread to the right half of the soft palate, the region of the right nasolabial fold and the right angle of the mouth. The whole arterior wall of the right antrum was removed, without relief. A year before coming to the clinic, he developed for the first time sudden, severe, sharp pains, lasting from five to thirty seconds, and initiated by external stimuli, such as washing the face, eating and speaking. All previous pains had been of a drawing and pulling nature. He had also a trigger area over the right angle of the mouth.

Examination revealed an extraordinary degree of mutilation over the right cheek and superior maxilla. There was a

sunken and depressed area over the right antrum, and the scar of the radium burn further added to the patient's dilapidated appearance. He was anesthetic in the region supplied by the right infra-orbital nerve, but there was no further degree of anesthesia. The right pterygoid, temporal and masseter muscles were completely paralyzed, presumably from the previous operation on the posterior root. Against our better judgment, another operation was added to those performed elsewhere by again attacking the posterior root of the fifth nerve. Complete anesthesia was produced this time, but while the sharp shooting pains were relieved, the patient complained as bitterly as before of a grinding, pressing, drawing sensation over the right cheek. He visited the clinic a year after the last operation. He had gained, for some unknown reason, nearly 40 pounds (18 kg.), but said that he was still suffering the same disagreeable sensations in the right cheek, only there was now a bulging sensation in the right half of the forehead. He considered himself no better, perhaps worse, and had numerous speculations to offer as to the possibilities of infection of the cranial bones, accumulation of pus inside the cranium, and last but the most dominant cause in his mind, the possibility of the previous gonorrhea being at the bottom of all the trouble. Section of the superior cervical sympathetic with ablation of the superior cervical sympathetic ganglion was considered but rejected, since it was deemed unlikely to cure under the circumstances.

The usual complaint in such a case is not of an actual sharp pain, but a crushing, squeezing, pulling, burning, boring, drawing or full sensation. Because the patient had eventually developed sharp pains, we were led to cut the posterior root of the gasserian ganglion. All that resulted was an increase in the original unpleasant sensation, with the disappearance of the more recent sharp pain. Frazier remarks on the frequency of these bizarre sensations in a group of cases he calls atypical trigeminal neuralgia, and also points out that similar sensations are complained of by a few patients after having been operated on for what was presumably genuine paroxysmal trigeminal neuralgia. These postoperative sensations, however, are more intense, and seem to come inevitably when the patient has been operated on for something other than paroxysmal trigeminal neuralgia, as in Case 3 in this series. This patient had the same sensations before and after section of the posterior root, only complained of more insistently. It would seem that the complaint of a disagreeable sensation, like the foregoing, without actual sharp pain, ought to act as a deterrant to the surgeon in contemplating all operations on the posterior root, ganglion, peripheral nerves, and structures supplied by them. They constitute a bad element in the prognosis, and do not seem to be abolished by the production of complete anesthesia. Section of the cervical sympathetic or removal of the superior cervical sympathetic ganglion is an unknown possibility, but seems to be the last surgical measure possible in such cases, next to decerebration. This patient's past history reveals the clue that stamps an obvious inadequate personality, as shown in the exaggerated response to a mild gonorrhea, as well as demonstrating his apprehensive, self-centered, unstable make-up. The mistake lay in regarding the local discomfort as the prime disease, and neglecting the inadequate, hypersensitive, poorly inhibited nervous system of which this discomfort was but one symptom.

Tumors arising in the cranial cavity, involving the ganglion and its branches by erosion of the base of the skull, sooner or later give obvious clinical signs of their presence. The pain may precede these for weeks or months; but, sooner or later, signs develop so that a diagnosis may be made with certainty. The pain is usually constant in advanced cases, with acute exacerbations coming on at night, awakening the patient from a sound sleep. It may be confined to one small area, and later steadily involve one division after the other of the fifth nerve, this onward progress being characteristic of tumor growth. The earliest objective sign is usually diminution or loss of the corneal reflex on the side involved. Angina pectoris may produce pain in the area of the fifth nerve; and, while this is extremely rare, a case previously reported by me [4] demonstrated this possibility. Syphilitic meningo-encephalitis involving the ganglions, root or peripheral branches, without other signs, is rare, but may occur; a positive serologic reaction will make the diagnosis. The scars of a former herpes ophthalmicus may be few, or hidden by the scalp hair, and the history of the onset misleading or confused, producing difficulty in recognizing the constant burning postherpetic pain.

Frazier has remarked on the difficulties in classification of the various pains in the area under discussion. Taking into consideration a large group of patients who suffered from what he calls atypical trigeminal neuralgia, he found so little similarity between the individual patients forming the group that he deemed it hardly justifiable to attempt further classification. On the other hand, this does not preclude all effort to try to find common factors leading to diagnosis, prognosis, and possibly to treatment. Besides the few cases described, there are a great many records in our files wherein no definite conclusion had been reached as to the cause of the pain. Case 8 represents one of the most striking of such cases.

CASE 8.—*Paroxysmal pain of thirteen years' duration, without intervals of normal health, and without obvious cause.* A woman, aged 32, came to the clinic, May 30, 1923, complaining of pain in the left side of the face. Thirteen years before, she had developed paroxysmal attacks of pain which had continued without change in character. At first the attacks occurred each spring and fall for a period of two weeks, with paroxysms every two hours. More recently, the appearance had been irregular. The paroxysms that came with each attack were characterized by severe pain beginning in the left shoulder at the outer border of the trapezius, at its juncture between the upper and middle third. Occasionally, the attacks began in the left upper and lower jaws. The pain usually spread up the left side of the neck into the left side of the face, and finally extended into the region of the left orbit, where it was the most severe. The severity increased gradually, and reached a maximum during the first two minutes. The patient usually dropped on her knees, hugged her face with both arms, dropped her head on a near-by object, and wept and moaned with pain. The pain remained severe for about three minutes, became gradually less in the next ten to fifteen minutes, and finally disappeared. Between attacks, the patient had absolutely no complaint. The pain was throbbing in character, synchronous with the pulse, and, for the short time it lasted, was extremely intense. The paroxysms were so arranged that the patient, while in public, could hurriedly leave the room at the onset and complete her attack outside, returning to take up her duties once more. She denied having any other pains, aches or hemicrania. For a week before an attack, but not invariably, the patient was warned of its approach by soreness in the jaws and over the left side of the face, and during the early years of the trouble, by a red spot which came and went over the left parietal region, in the same paroxysmal fashion as the pain itself, two or three days before an attack.

She was seen during several attacks, and changes in the size of the pupils, variation in the color of the face, and secretory disturbances, were looked for but not found. The most impressive feature was the clear-cut, stereotyped nature

4. Parker, H. L.: The Clinical Significance of Pain in the Area Supplied by the Fifth Cranial Nerve, Minnesota Med. 7: 69-78 (Feb.) 1924.

of the disease. The patient was a rather likable, well balanced, sensible girl, with no neurotic tendencies, not unduly hypersensitive, without any family history of migraine, and we could not help feeling that we were witnessing a very definite syndrome. The sphenopalatine ganglion was thoroughly cocainized during a few attacks, but without relief, and twelve deep alcohol injections had also been given elsewhere into the fifth nerve, also without relief.

This patient undoubtedly had some very definite cause behind the pain, and a similar case would be immediately recognized as coming under the same classification. It is of interest to speculate on the mechanism of the production of the pain, and yet any explanation is difficult in the light of its clear-cut, paroxysmal nature. Its starting point was outside the realm of supply by the trigeminal nerve, yet it was most severe in the first and second division. There were no signs of disturbance of the sympathetic system. Cocainization of the sphenopalatine ganglion had no influence. I had seen a similar distribution of pain in a patient whose cervical sympathetic nerve was destroyed by a metastatic tumor, and the pain ceased with the complete development of signs of superior cervical sympathetic paralysis, as shown in the ocular, vasomotor and secretory phenomena. Section of the cervical sympathetic was considered also in this case; but, unfortunately or fortunately, as the case may be, the patient rejected this form of treatment. Further research is required in order to clear up the problem. While this is only one of many of the unsolved problems of this type, it is to be hoped that continued observation, research and patient study in the future may ultimately lead to the understanding of all the multiple possibilities coming under the category of pain in the area of the fifth nerve.

ALCOHOLIC INJECTIONS INTO THE GASSERIAN GANGLION

REPORT OF CASES *

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Two years ago, Bransfield and I [1] made the statement that alcohol injected into the gasserian ganglion produced a chemical division of the posterior root and was just as effectual as the operation for dividing the posterior root. We were led to believe this by the favorable reports received from patients injected.

During the last year, we had the opportunity of doing some experimental work on the ganglions of dogs. We exposed the ganglion and injected it with alcohol. The dogs were killed after three weeks and the ganglions examined.

We found that where the alcohol came in contact with the ganglionic cells, it destroyed them and produced fibrosis. Despite the fact that the ganglion was exposed for injection and the ganglion injected in two or more places, we found that a large number of the ganglionic cells were not affected. This, we concluded, was due to the fact that the alcohol did not come in contact with the cells.

We then wrote to all patients who had been treated by the injection of alcohol into the gasserian ganglion. We asked them to report to their family physicians and have them write us how much sensation, if any, was present in the parts supplied by the fifth nerve. Replies were received in fifteen cases, in eleven of which we have since examined the patients. These eleven cases are reported here. Examination of these patients proved to us conclusively that, in the majority of cases of alcoholic injection into the ganglion, if permanent anesthesia in the entire distribution of the fifth nerve is present one month after injection, the pain will not return.

From an analysis of the cases, another point was quite evident; namely, that while sensation returned in part, it never returned completely in all divisions. Even though sensation returned in several of the patients, the old pain did not always follow. In one case of eight years' standing, complete loss of sensation was present in the entire distribution of the fifth nerve, and there was no pain recurrence.

At the same time that we wrote to patients in whom the ganglion had been injected, a letter was sent to patients in whom an outside injection of the nerve for neuralgia had been done. An entirely different state of affairs exisited in these cases. Sensation returned in all these cases, varying from seven months to eleven years. Pain did not always return with sensation. In a follow-up investigation this year, we have found patients who have been free from pain for eleven, nine, eight, six and five years following the injection of the third division. The majority, however, have had recurrences.

In checking up the histories, we found that a good rule to follow in our prognosis in cases in which the ganglion had been injected was the amount of anesthesia present at the end of a month. Shrinking anesthesia, that is, a condition in which the area of anesthesia becomes smaller during the first month, indicates clearly that the injection did not destroy all the ganglionic cells; at the end of the month, the anesthesia present is able to be permanent.

While we have been and still are advocates of ganglionic injection in trigeminal neuralgia, we no longer feel that it is a minor operation. We feel that it requires considerable experience and skill to do a proper ganglionic injection. We also feel that much of the criticism directed against this procedure has been due to the poor results obtained by inexperienced operators. We are also inclined to believe that the operation of partial or complete division of the posterior root as performed by Dr. Charles H. Frazier of Philadelphia (the mortality in his cases is less than 1 per cent.) is the operation of choice in true tic douloureux. Nevertheless, a certain percentage of patients will refuse the radical operation, despite its superiority over other methods, and insist on nerve or ganglionic injection. In these cases we feel that the injection of alcohol is justifiable. There is one class of cases in which alcoholic injection into the gasserian ganglion is strongly indicated, and that is in patients suffering from carcinoma of the face who have been treated by radium.

Some of these patients have a most severe type of neuralgia of the face. Relief is instantaneous when alcohol is injected into the ganglions, provided the pain is confined exclusively to the fifth nerve.

In June of this year, I examined in the office eleven patients, and looked up their records. I am going to give a brief summary of these cases, and will attempt to show how permanent the anesthesia is, and comment on the return of pain.

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* Read before the Section on Stomatology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Dorrance, G. M., and Bransfield, J. W.: Internat. Clinics 3: 287, 1922.

REPORT OF CASES

CASE 1.—F. F., aged 56, had tic douloureux involving all three divisions, the condition having begun in the third division two years before the patient consulted me. Feb. 7, 1916, the ganglion was injected with 85 per cent. alcohol. Complete anesthesia was obtained in all three divisions. Examination in June, 1924, showed anesthesia still present in all three divisions, and no return of pain. This patient, I feel, is permanently cured.

CASE 2.—A. T., aged 60, affected with tic douloureux, was given an alcoholic injection of the gasserian ganglion in June, 1917. The patient was examined in February, 1923. There was no return of sensation or pain. Examination in June, 1924, showed no return of pain or sensation.

CASE 3.—E. A., a woman, aged 57, with tic douloureux involving the second and third divisions, was examined, Jan. 2, 1917. Under gas anesthesia an injection with 85 per cent. alcohol was performed through the foramen ovale by the method of Hartel. Complete anesthesia was obtained in all three divisions. There was no return of pain or sensation until the patient's death, which occurred in 1924.

CASE 4.—P. P., aged 60, was examined June 30, 1921, and a diagnosis was made of trigeminal neuralgia, with only the second and third divisions involved. Alcoholic injection (85 per cent.) into the gasserian ganglion was done, with resulting loss of sensation in the second and third divisions. There was a return of sensation in the second division four months later. There was no return of pain. The patient died in 1923.

CASE 5.—E. S., aged 70, had tic douloureux involving all three divisions. The gasserian ganglion was injected with 95 per cent. alcohol. Complete anesthesia was obtained in all three divisions. There has been no return of pain to date; there has been return of sensation in the third division. The patient developed corneal ulcer, which responded to treatment, and is entirely well at the present time.

CASE 6.—A. K., aged 56, had tic douloureux involving the second and third divisions. An injection of 95 per cent. alcohol was made into the gasserian ganglion in January, 1922, in St. Agnes' Hospital, with a resulting complete anesthesia in all three divisions. There was a return of sensation eight months later in the first division, no return of pain and no complications.

CASE 7.—H. M., aged 72, had tic douloureux involving the second and third divisions. An injection of 95 per cent. alcohol was made into the gasserian ganglion in January, 1921. Complete anesthesia was obtained in all three divisions. There was no return of pain; there was a partial return of sensation in the first division; a complication was the appearance of a corneal ulcer, which cleared up two months after treatment.

CASE 8.—F. B., aged 41, was examined, Oct. 8, 1916, and a diagnosis of tic douloureux was made. Injection into the third division, or the lower part of the ganglion, was performed. In 1919, there was a return of pain in the second division. Sept. 30, 1923, anesthesia was still present in the third division; another injection was made into the ganglion, with a resulting complete anesthesia in all divisions at the time of operation. One month later, sensation returned in the upper two divisions. There was no return of pain.

CASE 9.—H. B., aged 45, had tic douloureux involving the second and third divisions. Injection was performed, Sept. 10, 1923, and complete anesthesia was obtained in all three divisions. In June, 1924, there was a return of sensation but no return of pain in the second division. There were no eye complications.

CASE 10.—M. A., aged 40, had tic douloureux involving the second and third divisions. Injection into the ganglion was performed, Sept. 10, 1923, with a resulting complete anesthesia and a paralysis of the sixth nerve, which gradually cleared up. In June, 1924, the movements of the eyes were normal. There was no return of pain or of sensation.

CASE 11.—H. S., aged 40, seen, June 6, 1923, had atypical neuralgia, with pain mostly in the eye and over the entire left side of the head. The patient had paralysis of the third, fourth and sixth cranial nerves before injection. This had cleared up to some degree, but recurred again. Alcohol was injected, and the pain relieved. Anesthesia was produced in all three divisions. The following day, fourth nerve paralysis occurred. In June, 1924, examination was made. There was no pain. The paralysis of the eye muscles changed from time to time. Anesthesia was present in three divisions. The patient had gained 40 pounds (18 kg.).

CONCLUSIONS

Injections of the gasserian ganglion are usually permanent, if enough alcohol is injected. At times one is able to inject the lower one third or half of the ganglion and not involve the entire ganglion, but no one can promise this.

Paralysis of the ocular muscles occurs at times. It always clear up.

The absolute indication for injecting the ganglion is in carcinoma of the upper or lower jaw, or one side of the tongue.

In outside injection as well as ganglionic injection, the prognosis can be made at the end of the month; i. e., if anesthesia is present at the end of a month, it is apt to remain so.

The results depend on just how much alcohol is distributed in the ganglion or posterior root, and, in the case of an outside injection, into the nerve fibers.

Eye complications occur in about the same proportion as in division of the root by any other method.

We have had no mortality.

ABSTRACT OF DISCUSSION

DR. WILLIAM T. COUGHLIN, St. Louis: The statement that diagnosis of tic douloureux is so clear cut that it needs no discussion applies to men who are doing this kind of work; but frequently the diagnosis of trigeminal neuralgia is made when it is not trigeminal neuralgia at all. Sometimes the patient comes accompanied by a physician, determined to have operation done. It has been recommended as a "cure-all" for all kinds of pain about the face; and root section does not cure all kinds of pain about the face. I have had the experience of seeing patients who have had many different operations and yet failed to secure relief, and most frequently the unrelieved have psychic pain, for which nothing will do much good. There is a large class of cases that are termed neuralgia of the Sluder type, pain ranging from the root of the nose around the lower margin of the orbit to the ear. This pain is paroxysmal like true trigeminal neuralgia, but also there is pain between the spasms. As far as I know, pain distributed outside the area of the fifth nerve is not true trigeminal neuralgia. I do not try to relieve those patients by a root section. Patients frequently complain of bilateral pain. I have seen true bilateral trigeminal neuralgia twice. The treatment is so certain that the diagnosis is something that everybody ought to be familiar with. In treatment, two things should be considered: alcohol injection and root section. Alcohol injection was popularized in this country by Dr. Patrick of Chicago. It is an excellent means of treatment. If the alcohol is carried into the sheath of the nerve, freedom from recurrence is quite long. Patients whom I injected in 1911 are still free from recurrence. Alcohol injection into the gasserian ganglion itself can be done in a certain percentage of cases. If anyone wishes to become familiar with the accidents that follow alcohol injections into either the ganglion or the nerves, he has only to read an article published by Cushing in 1920. I have had some of the bad results. I injected a man's ganglion in 1915 and he has not had a recurrence of neuralgia since—but he lost his eye as a consequence. Cutting the sensory root under local anesthesia seems so easy and so simple and so free from danger that a patient should be given his choice. Alcohol is not applicable when the neuralgia involves the first division. Root section under local anesthesia is the operation of choice. It may be that many of these vague pains about the face may

be of sympathetic origin; but what their ultimate cure is to be, I believe is yet to be learned.

DR. FREDERICK A. FIGI, Rochester, Minn.: I should like to ask Dr. Dorrance how much reaction he gets following his ganglion injections.

DR. FRANK J. TAINTER, St. Louis: The diagnosis of a pathologic condition in the area supplied by the fifth nerve is sometimes difficult. It must be borne in mind that the epicritic sensibility corresponds only to the anatomic distribution of the fifth nerve. The protopathic sensibility is less than the anatomic area supplied by the fifth nerve, and is not lost when the fifth nerve is cut. It is evident that protopathic fibers from the second cervical invade and supply the area; again, the deep structures of that area are sensitive to pressure and are recorded in the brain through afferent fibers of the seventh nerve; the periarterial sympathetics also are distributed in the area in question. It is not common that a pathologic condition of any one of these nerve fibers may be recorded as pain in the fifth, and the system react as though it were. When a question arises as to whether the trouble be a true tic douloureux, I have found alcoholic injection as advocated by Dr. Dorrance a valuable aid; however, I have little faith in its being a curative measure. My experience has been that in true tic douloureux it relieves the pain for nearly two years, and then it returns as severe as ever. I have found the subsequent operation of cutting the posterior root very much complicated by adhesions of the dura to the semilunar ganglions.

DR. A. P. MUNSCH, St. Louis: Trigeminal neuralgia is a symptom of an unknown disease. The treatment for its relief is symptomatic. After a careful history has been taken, a careful physical examination made and competent laboratory work done, all by competent men, careful consideration should be given for possible focal infection chiefly about the mouth. Fragments of teeth sometimes remain after extraction, and unerupted teeth may be present. These act as irritants on the fifth nerve, and after a time seemingly there is an accumulation of irritation, and the patient has the outburst of the symptom tic douloureux. We must remember that patients at times do not present the picture of true tic douloureux at first.

DR. FREDERICK B. MOOREHEAD, Chicago: In the analysis of pains about the head, it is well to classify them according to certain groups: (*a*) those produced by local causes; (*b*) those due to toxins, and (*c*) those that are to be classified as referred or reflex in character. I would reemphasize the danger of operative procedure or the injection of alcohol. Alcohol injection is indicated only in tic douloureux. I agree that the diagnosis of this lesion is fairly simple and need not be confused with other forms or types of pain. I am not sure that I approve of the injection of the ganglion in trifacial neuralgia.

DR. HARRY PARKER, Rochester, Minn.: Frazier recently cited the case of a patient who had unpleasant sensations in the face following section of the posterior root for trigeminal neuralgia. In the hope that some of these disagreeable feelings might be carried by the sympathetic system, he stripped the periarterial plexus of the sympathetic fibers in the carotid, and ablated the superior cervical sympathetic ganglion. So far as I was able to gather from the article, such relief was not complete. It would seem that further information is needed on this point. From the standpoint of the seventh nerve, I remember one patient who had section of the posterior root for a pain that was not trifacial neuralgia. Following the operation there was a paralysis of the seventh nerve, and thus the two cranial nerves were equally put out of commission. The same pain was experienced following this operation as had been suffered before. I have yet to see a patient who has had complete destruction of the fifth nerve, the seventh nerve and the cervical sympathetic supply to the face. Until this comes into my experience, I am not in a position to draw any conclusions as to the complete sensory innervation of the fifth nerve area, especially with reference to the relief of pain.

DR. GEORGE M. DORRANCE, Philadelphia: I want it distinctly understood that I favor resection of the posterior root as effected by Spiller and Frazier. Nevertheless, some patients, for one reason or another, will not permit this operation. In some cases, the family physician has influenced the patient and advised alcohol injection. It may be because of diabetes, high blood pressure or some other factor. I have attempted to present the results I have obtained in carefully following up these cases. I think that if alcohol injection is properly done, the complications of which one reads will not occur. In my opinion, the majority of these complications are due to faulty technic. I have not lost an eye or had any deaths. The minor complications that I have had have cleared up under appropriate treatment. In cases in which I was successful in injecting the alcohol in sufficient quantity to bathe all portions of the gasserian ganglion, I have not had any recurrences. Nevertheless, after a complete review of all my cases, I feel that in the vast majority of cases the resection of the posterior root is the operation of choice.

A COMPARISON OF MORTALITIES FROM ALCOHOL

A REPORT FROM THE CORONER'S OFFICE OF COOK COUNTY, ILLINOIS

WILLIAM D. McNALLY, M.D.
CHICAGO

In 1921, Hatton [1] reported the results of a study of the rôle alcohol had in deaths accompanied or caused by traumatic fracture of the cranial bones. This is a second study of records from the coroner's office in Chicago, and deals with the total number of deaths from alcohol alone, between the years 1910 and 1923 inclusive, and also the deaths from other causes in which alcohol played an important part. The other causes (Table 1) were deaths from accidental external violence, such as autotruck and automobile deaths, from suicide of all sorts, from homicide, and deaths from causes undetermined by the investigations that were conducted. The figures for the population on which the graphs were constructed were furnished by the bureau of statistics of the health department of the city of Chicago.

TABLE 1.—*Alcohol Cases, 1910-1923, Inclusive*

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Accidental	13	34	68	25	28	35	40	37	28	22	20	34	39	42
Suicide	2	9	21	7	6	6	2	3	5	3	1	10	7	6
Murder	3	0	11	7	3	3	2	1	2	4	5	13	5	6
Alcoholism	215	76	108	69	91	110	87	88	46	55	41	97	158	189
Undetermined	..	..	..	3	5	9	12	9	5	3	3	14	5	13
Total	233	119	208	108	133	163	143	138	86	87	70	168	214	247

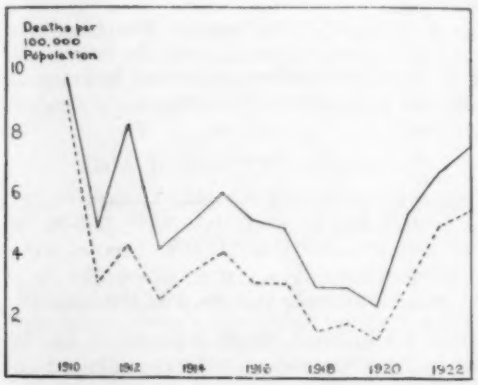
In this review there are included no deaths except those accompanied by a history of alcoholism or a chemical examination. The number of such deaths has been shown graphically in the accompanying chart for each year on a basis of 100,000 population. For comparison as a starting point, I have taken the year 1910, giving data for several years prior to the passage of the prohibition act in 1918 and for five years afterward.

During the years 1918 to 1920, inclusive, it will be noted that the number of deaths decreased markedly, and from this time there was a steady increase in deaths until the high peak was reached in 1923. During this period there was a gradual dissemination of the knowledge of the manufacture of illicit liquor as a result of the scarcity and high prices of genuine liquors. Associated with the increase in the consumption of this type

1. Hatton, E. H.: Ratio Between Deaths from Traumatic Fracture of Cranial Bones and from Alcohol, J. A. M. A. 77:2109 (Dec. 31) 1921.

of liquor, a peculiar alcoholic psychosis appeared in place of the delirium tremens formerly noted. Capps and Coleman [2] assert that the use of alcohol is greatly on the decrease among the poor, as shown by the fact that the yearly incidence of from twenty to forty-three cases of delirium tremens developed during the course of pneumonia in the preprohibition years, while in 1921 and 1922 together, only one case occurred.

Perhaps the alcoholic psychosis is due to the use of overfermented liquor with the increased acetaldehyd content [3] or the use of rectified denatured alcohol, synthetically flavored and artificially colored. In the production of grain alcohol in a distillery, amyl alcohol (fusel oil) is a by-product amounting to many tank cars yearly. In the home brew and illicit liquor, the public is consuming many thousands of gallons of amyl alcohol, for with the "moonshiner's" crude methods of production the alcohol distilled is not as free from amyl alcohol and other impurities as that distilled under government supervision.[4]



Deaths due to alcohol, Cook County, 1910-1923: solid line, total deaths; broken line, alcoholism.

The amyl alcohol content of good whisky varies from 84.9 to 193.6 gm. per hundred liters.[5] The average aldehyd content for legitimately made new products was 3.9 parts per hundred thousand, while the modern "moonshine" may contain as much as 100 parts. In the table I have given the number of deaths for each year under the subdivisions mentioned above, and the total number of deaths in which alcohol was a factor. I have not obtained a satisfactory explanation as to why the large number (233) of deaths occurred in 1910, or why such a drop occurred in 1911 as seen in the chart at the second peak. During the first three years of prohibition, it is noted from the files of the coroner's inquests, by the predominance of the names, that most of the alcoholic deaths occurred in the foreign population, very few in the colored races and native born Americans. The records indicate that in 1923, the number of Americans exceed that of other nationalities. From the records of the chemical examinations made in the coroner's chemical laboratory, there has been a steady increase in the number and the percentage of cases containing alcohol submitted by all of the coroner's physicians. In 1915, 2.2 per cent. of the cases contained alcohol, while in 1923, 35.7 per cent. of the cases submitted contained alcohol. As changes in the medical staff have occurred in the last ten years, which might have caused a variation in the figures, I have added Table 2 for comparison, giving the data that were obtained from the material examined and submitted by Dr. E. R. LeCount, who was located at the county hospital during this period. It is to be noted that in Dr. LeCount's cases the percentage of cases showing alcohol increased from about 2 to 60 per cent.

TABLE 2.—*Alcohol Cases from the County Morgue, 1914 to 1923, Inclusive*

	Year									
	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Number of alcohol cases.....	1	1	16	16	30	47	74	121	180	201
Total number of cases from the morgue.....	56	59	87	114	90	140	179	230	267	344

What is the cause of this increase, and the number of deaths associated with alcohol? Is it the present greater amount of impurities in the illicit liquor, or is it the greater consumption of alcoholic beverages? A chemical examination of the illicit liquor has failed to point out definitely the toxic substance responsible for the deaths. Also animal experiments have failed to show that acetaldehyd alone is the toxic substance, as 2 c.c. of a solution containing 200 parts per hundred thousand of 50 per cent. alcohol has been given daily without killing rats.

SUMMARY

1. Deaths from alcoholism are on the increase.
2. A chemical analysis of illicit liquors fails to show a definite toxic substance responsible for the increase in deaths.
3. Animal experiments indicate that "moonshine" beverages are more toxic than preprohibition beverages.
4. With animal experiments, acetaldehyd alone cannot be considered the toxic substance causing the increase in the number of deaths due to alcohol.

2. Capps, J. A., and Coleman, G. H.: Influence of Alcohol on Prognosis of Pneumonia in Cook County Hospital, J. A. M. A. **80**: 750 (March 17) 1923.

3. Doran, J. M., and Beyer, G. F.: Character of Moonshine Liquor, Am. J. Pub. Health **13**: 831 (Oct.) 1923.

4. It is known from a large number of our animal experiments that rats given daily doses of 1 c.c. of a "moonshine" liquor died in a few months, while controls given the same strength of pure grain alcohol lived for many months.

5. Shepard: South Dakota Food and Dairy Commission, March, 1906.

Clinical Notes, Suggestions, and New Instruments

TOXIC RESULTS OF DYE TREATMENT IN SEPTICEMIA *

ALFRED C. REED, M.D., AND DONALD D. LUM, M.D.,
SAN FRANCISCO

It is our desire to call attention to certain toxic results of the administration of dyes intravenously in cases of bacterial septicemia. In the case of mercurochrome-220 soluble especially, we have noted the occurrence of stomatitis of a severe grade with hemorrhage, diarrhea and dysentery, and the appearance of casts and albumin in the urine. These effects have had the usual clinical features of mercurialism. In some cases we have obtained excellent and immediate improvement with the oral and rectal administration of sodium thiosulphate solutions.

REPORT OF CASES

CASE 1.—*History.*—O. M., a man, aged 45, entered the medical service of Lane Hospital, July 1, 1924, complaining of weakness, dyspnea, swollen ankles, loss of 20 pounds (9 kg.) and afternoon fever for the preceding six weeks. Examination showed only a substantial secondary anemia and a loud systolic blow over the precordium, together with enlarged spleen and small petechiae over the chest. Blood culture gave

* From Medical Service, Stanford University Medical School.

a pure growth of *Streptococcus pyogenes*. The diagnosis was subacute bacterial endocarditis.

Treatment.—July 2, the patient was given 38 c.c. of 1 per cent. mercurochrome. The following day, he passed eight diarrheic stools, which were relieved by 1 gm. doses of sodium thiosulphate by mouth.

July 5, a second dose of 40 c.c. of 1 per cent. mercurochrome was given again intravenously, and at the same time the thiosulphate was administered. He had a very mild diarrhea for two days after this treatment. Blood culture then showed an abundant pure growth of *Streptococcus pyogenes*.

July 10, a third dose of 45 c.c. of 1 per cent. mercurochrome was given by vein and 2 gm. of sodium thiosulphate by mouth. The thiosulphate was repeated in the same dosage each two hours for twelve doses. In spite of this he passed eleven stools in the first thirty-six hours. The clinical condition grew progressively worse, being only temporarily aggravated by the dye injections, and death occurred, July 17.

Case 2.—*History.*—S. P., a man, aged 39, entered the medical service of the hospital, June 6, 1924, complaining of pain and swelling in the knees, shoulders and neck for the preceding two months. Six months previously he had had an active gonorrheal infection, with a discharge persisting to the present. He showed a mild chronic infection of the prostate, and arthritis of the cervical vertebrae, shoulders, knees and ankles.

Treatment with Dyes.—June 19, he was given by vein 30 c.c. of 1 per cent. mercurochrome with a severe febrile reaction and a severe diarrhea, having thirty-eight movements in seventy-two hours. Bismuth was used to control the diarrhea. The arthritis was considerably improved. June 29, 30 c.c. of 1 per cent. mercurochrome was again given in the vein, with a lighter febrile reaction and a mild diarrhea. Clinical improvement was very satisfactory.

Case 3.—*History.*—Mrs. H. H. entered the gynecologic service of the hospital, July 23, 1914, complaining of an exacerbation of an old pyelitis, which she had had for thirty-two months since parturition. Examination showed only extreme tenderness in the region of the right kidney. The urine was loaded with pus.

Treatment with Dyes.—July 25, the patient received by vein 10 c.c. of 1 per cent. mercurochrome. There was no effect on the general condition, and no reaction.

July 30, she was given 20 c.c. of the same solution, and in the next twenty hours passed thirteen bowel movements containing mucus and much blood. Two colonic flushes with 10 per cent. sodium thiosulphate relieved the diarrhea. Following this injection, the temperature rose to 104 F., and then dropped to normal and remained normal.

Case 4.—*History.*—W. M., a private patient entered the hospital, July 3, 1924, complaining of fever and weakness for the preceding month. One month before, he had been bitten on the tongue, and a small abscess developed, which was drained. This was followed by a low fever and increasing weakness. Four days before admission, the fever increased and remained high. On admission, no focus of the original infection could be located. During the thirty days in the hospital he developed numerous abscesses in the soft tissues and one shoulder joint, and also a thrombophlebitis. Finally, bronchopneumonia appeared. Pus from the various abscesses showed a nonhemolytic streptococcus. Three blood cultures were negative.

Treatment with Dyes.—July 9, he received 35 c.c. of 1 per cent. gentian violet by vein. There was no reaction except a temporary tightness in the chest. There was no effect on the fever or the general condition. July 11, he was given 40 c.c. of 1 per cent. mercurochrome by vein. Eight hours later, severe diarrhea began, with considerable blood in the movements. On the first two days he passed seventeen stools each day. This was treated with sodium thiosulphate in the vein and by mouth, a total of twenty-one doses in seventy-two hours, 2 gm. per dose in 25 per cent. solution. No effect was noted on the fever or general condition otherwise. It is to be observed that sodium thiosulphate is itself a mild laxative and may have prolonged the diarrhea in this case, although it relieved the tenesmus and hemorrhage. July 15, 28 c.c. of 1 per cent. gentian violet was given by vein, with no reaction and no effect o nthe fever. He subsequently recovered.

Case 5.—*History.*—C. H. R., a private patient, aged 24, had been taken ill, May 10, 1924, on the basis of an old rheumatic heart having a double aortic lesion and a mitral leak. Syphilis was excluded fully. The patient ran a typical course of subacute bacterial endocarditis with purpura, rheumatism, epistaxis and jagged fever. Heart signs and positive spleen were the most marked findings.

Dye Treatment.—June 12, the patient was given 30 c.c. of 1 per cent. gentian violet solution in the vein. There was no reaction. Two days later, 30 c.c. of 1 per cent. mercurochrome was given in the vein, followed by a severe chill, vomiting and critical drop in the temperature. The fever rose again in eight hours to its former level. Then diarrhea set in, soon changing to a severe dysentery with half hourly movements consisting largely of blood, mucus and tissue shreds. Blood appeared in the urine along with albumin and many mixed casts. The following day an extreme stomatitis developed, with considerable hemorrhage from the gums. Treatment consisted of sodium thiosulphate by mouth and rectum, and in two days the reaction was controlled. The blood cultures were positive throughout for *Streptococcus viridans*, and the infection pursued an uninterrupted course to death, July 31.

Case 6.—A. N., aged 34, had typical *Streptococcus viridans* infection. The case ended fatally, and the course was uninterrupted by gentian violet treatment and transfusion. This patient gave no reaction to dye treatment.

380 Post Street.

A REPORT OF MERCUROCHROME THERAPY IN FOUR CASES OF GONORRHEA AND THEIR COMPLICATIONS

Miguel Lavandera, M.D., New York
Assistant Attending Urologist, French Hospital

Apropos of the brilliant results reported by Dr. Willis A. Whitman[1] in the treatment of gonorrhea and its complications, the following report may be of interest.

REPORT OF CASES

Case 1.—C. C., a man, aged 34, entered the hospital, June 28, 1924. Eight years before, he contracted gonorrheal urethritis, which was treated as usual. Four years later he developed urethral gleet and achy pain in both feet, these symptoms resisting all local treatment. Examination revealed a moderate amount of pus in the fluid expressed from the prostate and vesicles; there was a slight swelling and tenderness in the proximal joint of the small right toe. The Wassermann reaction of the blood and spinal fluid were negative at different times. At forty-eight hour intervals, he received four injections of mercurochrome-220 soluble in doses of 10, 14, 15 and 18 c.c., respectively. As the last dose produced colicky pain and diarrhea, the mercurochrome was discontinued. Apparently being cured, the patient was discharged, July 9. Two weeks later he wrote: "The pain in the feet and the morning drop came back as before."

Case 2.—P. J., admitted to the hospital, June 25, 1924, five days before and developed a profuse urethral discharge, dysuria and right sided epididymitis; a urethral smear showed many colonies of gonococci. Mercurochrome was given in doses of 10, 11, 15 and 15 c.c. each in five days. Severe stomatitis and dermatitis were present after the last dose. No further mercurochrome was given. July 1, a urethral smear showed numerous gonococci; the prostate and vesicles were tender and boggy; the epididymitis was improved. The patient was discharged for further routine treatment.

Case 3.—P. V., aged 19, Aug. 12, 1924, presented typical gonorrheal urethritis of five weeks' duration. Three days before he developed left epididymo-orchitis and dysuria. In the hospital, three injections of mercurochrome in doses of 10, 11 and 15 c.c. each were given successively in three days.

1. Whitman, W. A.: Mercurochrome-220 Soluable Intravenously in Chronic Gonorrhea and Complications, J. A. M. A. **82**: 1914 (June 14) 1924.

The last injection was followed by diarrhea and colicky pain. No further mercurochrome was given. August 16, considerable urethral discharge was still present; the epididymitis was unchanged; the epididymis was incised and drained. Two days later the patient was discharged for treatment as usual.

CASE 4.—R. F., aged 22, contracted gonorrhea two years ago. For the last fourteen months he has complained of pain in the region of the prostate and vesicles, accompanied by an occasional thin discharge from the meatus. These symptoms have resisted all local treatment. Cystoscopy, urethroscopy and a urethral smear were negative. Mercurochrome in 10, 15 and 15 c.c. doses was administered in three successive days, the last dose being followed by diarrhea. August 15, he was discharged unrelieved for further treatment.

COMMENT

These cases are essentially like those referred to by Willis; likewise, I used mercurochrome-220 soluble, 1 per cent. strength, each dose being freshly prepared in distilled water.

That mercurochrome failed to exhibit any therapeutic effect in the cases reported above is self-evident. Equally inefficient has been this therapeutic agent in my routine treatment of gonorrhea and its sequelae.

Until the weight of evidence proves the contrary, mercurochrome-220 soluble will be found of no value against the gonococcus.

138 East Fifty-Fifth Street.

PRIMARY CHANCRE OF THE PALPEBRAL CONJUNCTIVA IN AN INFANT

ALBERT H. BURR, M.D., DIXON, ILL.

The case of chancre of the conjunctiva in an adult reported by Dr. W. P. Ling,[1] Peking, China, prompts me to submit a report of an unusual instance in a female infant, 18 months old: first, to add another case to the eighty-two cases compiled by Maxey,[2] and, secondly, to show how error may occur in the diagnosis of chancre outside its favorite habitat.

This incident occurred in the earlier years of my practice in Chicago, antedating the discovery of *Spirochaeta pallida* and the Wassermann reaction. Called to the home of this infant to prescribe for a hoarse, laryngeal cough persistent for some time, I observed also a slight conjunctivitis of the left eye. About two weeks later I saw the child again, as the cough had not yielded to treatment and the hoarseness was now apparent also when it talked or cried. The left eyelid had become everted, and an indurated ulcer adherent to the tarsus occupied the palpebral center. A more typical chancre I had never seen on an everted prepuce. Furthermore, an enlarged lymph gland had developed below the lower maxilla. A new light dawned on the peculiar laryngeal symptoms and my failure to relieve them.

I drew from the mother the information that in the meantime she had taken her child to an eye specialist, who said he could not tell her the exact nature of the trouble, but thought it would yield to treatment, and that she had an appointment to take the child to him that afternoon.

After two weeks the child developed a rash which the mother called measles, but its temperature was normal, coryza was absent, and the child was playing around on the floor. I informed the mother that the child had syphilis. After I had prescribed vigorous local and systemic antisyphilitic measures, the mother followed me to the outer hall and stated that her husband had contracted syphilis and had infected her before he knew its nature, and that both were under treatment. She feared she was pregnant again. An early appointment for examination was made which revealed a three months' pregnancy and evidence of recent syphilitic lesions.

The rapid disappearance of the chancre and of secondary lesions was gratifying. In early womanhood, a slight plastic operation for cosmetic effect was done to remedy a cicatricial notch on the margin of the lid.

403 East Everett Street.

1. Ling, W. P.: Primary Chancre of Palpebral Conjunctiva, J. A. M. A. 83:503 (Aug. 16) 1924.
2. Maxey, E. E.: Am. J. Ophth. 1:13 (Jan.) 1918.

Special Article

GLANDULAR THERAPY

PHARMACOLOGY OF THE PITUITARY GLAND *

T. H. SOLLMANN, M.D.
CLEVELAND

In analogy with the suprarenal gland and the pancreas, the pituitary gland contains two portions that differ absolutely in function and in pharmacology. It is remarkable that the parts of the suprarenal and pituitary that are most important to life have the least pharmacologic actions, while those parts whose extracts produce very striking pharmacologic effects—the suprarenal medulla and the posterior pituitary—appear to be of minor importance to the organism.

RESPONSE OF SMOOTH MUSCLE

Extracts of the posterior pituitary cause powerful stimulation of smooth muscle, varying in degree, however, in different situations and under different conditions; there may even be relaxation, or a sequence of relaxation and contraction. The effects occur in denervated organs. The peculiarities are not related to the origin of the autonomic innervation; the actions are therefore more closely related to those of histamin or the protein "shock" poisons, than to those of epinephrin.

RESPONSES OF THE UTERUS

The strongest and most important action of pituitary extract is on the uterus. Experimentally and clinically, this responds by increased functional activity; increase of tone; initiation or reinforcement of peristaltic contractions, or firm spasm. The degree of response varies with the excitability of the uterus.

EFFECTS ON THE CIRCULATION

Intravenous injection of pituitary extracts produces a rise of blood pressure by constriction of the arterioles. The pituitary rise is not as high as the analogous rise produced by epinephrin, but it is much more sustained; the pressor response to pituitary tends to fail on repeated injection, and a depressor effect becomes more and more prominent. The latter is perhaps due to a histamin-like or shock action—a dilatation of the capillaries, which would diminish the return of blood to the heart, and therefore impair the output of the heart. This histamin-like action is obscured in the earlier injections by the arterial constriction.

The pressor action has been tried in shock, but without definite benefit; it has also been used in the place of epinephrin in local anesthesia, but requires high concentrations (20 per cent. of the commercial solutions).

Intestines.—Experimentally, these respond by contraction or relaxation, or both, according to the species and conditions.

Urinary Bladder.—This tends to be stimulated in the experimental animal.

Bronchial Muscle.—This is generally stimulated in the experimental animals.

Normal Urine Flow.—The injection of pituitary into animals may increase the urine flow, probably by improving the renal circulation; but the increase is of

* This is the ninth of a series of articles prepared under the auspices of the Council on Pharmacy and Chemistry. When completed, the series will be published in pamphlet form.

very short duration. The daily output of urine tends to be diminished; and this is the usual result of the clinical use. The decrease concerns mainly the water of the urine, and is especially marked in cases of polyuria. This has found an important *clinical application in diabetes insipidus:* the pituitary suppresses the polydipsia and polyuria, and restores the concentration of the urine. The effect, however, persists only as long as the administration is continued. The action is apparently renal; i. e., the kidneys do not filter off the water as readily. Accordingly, excessive consumption of water while the patient (or animal) is under the influence of pituitary injection leads to water retention, and to nervous symptoms resembling those of cerebral edema.

Milk Secretion.—Pituitary injection may produce a temporary increase of milk secretion, followed by compensatory decrease, the daily output being practically unchanged. A part of this effect is due to expulsion of milk by stimulation of the smooth muscle in the gland. The flow of *cerebrospinal fluid* is increased, while the *salivary and pancreatic secretions* are diminished.

The Active Constituents of Posterior Pituitary.—The active constituent, or more probably constituents, of the hypophysis have not been isolated. They are easily extracted by boiling with dilute acid; are precipitated from this solution by alkaloidal precipitants, and pass into alkaloidal solvents. However, when further purification is attempted, their activity disappears. Apparently the extracts contain only minute amounts of highly active substances, which tend to be adsorbed by precipitates, and which are very unstable when the protective influence of the impurities is removed—the latter acting perhaps as protective colloids.

The precipitation and solubility characters are those of amin bases; but they may be due to the adsorbents, rather than to the active principles. The actions resemble histamin; but the uterine action is at least fifty times as powerful, and there are also important qualitative differences.

Stability.—Alkaline, neutral and faintly acid solutions deteriorate fairly readily, especially on heating; but when the acidity of the extracts corresponds to about 0.25 per cent. acetic acid, they may be boiled (but not autoclaved) without loss of activity. Digestive ferments tend to destroy the activity of the extracts, although the data are somewhat contradictory; very possibly the decomposition is secondary to cleavage of the protecting colloid.

Absorption.—Oral administration does not produce any constant effect.

Standardization of Pituitary Extracts.—Uniformity of activity is highly important for drugs that produce such powerful effects. Chemical assay is at present out of the question. It is therefore necessary to measure the potency by the effects. Since the several constituents differ somewhat in the direction of their actions, it is necessary to choose a test object that reflects the more important clinical use. The response of the excised guinea-pig uterus has been almost universally selected, and seems very satisfactory when proper precautions are observed. The pressor action varies generally in the same direction.

The test is carried out by comparing the response, under carefully controlled conditions, with that produced by a standard. Histamin and potassium chlorid were proposed for this purpose, but have not been found satisfactory, because conditions that cannot be controlled affect their activity in a different manner from the pituitary response. The present tendency is to employ for comparison a standard preparation of pituitary. The need of standards is shown by the fact that at present the strongest commercial preparations are ten times as active as the weakest.

Anterior Pituitary.—This does not produce any immediate effects. Contradictory results on growth and development have been reported as the result of feeding the gland.

PHYSIOLOGY OF THE PITUITARY GLAND

W. H. HOWELL, M.D.
BALTIMORE

Modern conceptions of the physiology of the pituitary gland began with the work of Oliver and Schäfer (1895) and Szymonovicz (1896), who showed that extracts of the gland, when injected intravenously, give an effect on blood pressure. Howell (1898) pointed out that these effects on blood pressure are given only by extracts of the posterior lobe. Since that time a distinction has been made by most writers between the physiology of the posterior and of the anterior lobe. In regard to the posterior lobe, the work of numerous observers indicates that the following effects may be given by its extracts when injected into the circulation:

1. A marked rise of blood pressure (pressor effect), preceded in some cases by a fall of blood pressure (depressor effect).
2. An increased secretion of urine (diuretic effect).
3. A decreased secretion of urine (oliguretic effect).
4. An increased secretion of the mammary gland (galactagogic effect).
5. A stimulating action on plain muscle tissue, especially the musculature of the uterus (oxytocic effect).

It has been made probable that the effect on the mammary gland is due to a stimulating action on the plain muscle tissue of the gland, and not to a direct influence on the process of secretion.

If we assume, as is probable, that the pressor effect on the circulation is also due to a stimulation of the plain muscle tissue of the blood vessels, then the outstanding reactions of these extracts are two; namely, a stimulating action on plain muscle and a diuretic action. It is not clear whether the substance or substances producing these effects are derived from the nervous portion of the posterior lobe, the pars nervosa, or from the pars intermedia and pars tuberalis, which, like the anterior lobe, originate from the buccal epithelium. Efforts to isolate these substances in a state of chemical purity have not been successful. Abel has succeeded in obtaining a material from the crude extracts which exhibits these reactions in exceedingly small concentrations. It causes a pressor effect in doses of 0.01 mg., and a distinct diuresis is obtained from 0.05 mg., while its oxytocic action is said to be more than a thousand times stronger than that shown by the acid phosphate of histamin. Abel believes that the pressor, diuretic and oxytocic effects are all due to the same substance. It is natural to assume that this substance is a characteristic product of the posterior lobe, and that it is normally secreted into the blood and plays an important rôle in the physiology of the organism. Convincing proof that such an internal secretion takes place is lacking as yet. Surgical extirpation of the posterior lobe in mammals is not followed by any detectable effect on kidney secretion or on the circulation or the visceral organs, and the exis-

tence in the blood of a hormone with these properties has not been demonstrated. It is known therapeutically that administration of the extracts of the posterior lobe are effective in controlling the secretion of urine in cases of diabetes insipidus or in the experimental polyurias caused by operations on the hypophysis. The inference from such a result would be that the normal internal secretion of the posterior lobe has an oliguretic action on the kidneys, a conclusion that is at variance with the diuretic influence exhibited experimentally by its extracts. This contradiction is explained in part by the recent work of Camus and Roussy, and Bailey and Bremer, which indicates that a condition of polyuria does not result from injuries of the hypophysis but from lesions of the neighboring hypothalamic region. It is also possible that the apparent oliguretic action may be an indirect result of the pressor effect on the kidney vessels. Some evidence for a normal physiologic function of the posterior lobe is found in Krogh's experiments. He states that, in frogs, removal of the hypophysis is followed by a long lasting loss of tone in the capillaries of the skin. On the other hand, injection of extracts of this lobe will cause restoration of capillary tone in doses so minute (from 0.00002 to 0.000001 mg.) that the arterial musculature is not affected. Our positive knowledge regarding the physiology of the posterior lobe is limited to the fact that it produces a substance that has a marked pressor, diuretic and oxytocic effect. Whether this substance enters the blood and exerts its influence on the tissues remains to be proved, and speculation in regard to its hypersecretion or hyposecretion must be received with caution.

In regard to the physiology of the anterior lobe, many of the conclusions that have been based on the results of its extirpation have been brought into question by the work referred to above. The death following its complete removal, the cachexia, inhibition of growth, adiposogenital dystrophy, polyuria and disturbance in carbohydrate metabolism that were said to result from extensive injuries to the lobe may all be referable, possibly, to lesions of the neighboring hypothalamic cortex. Until this point is settled definitely, much that has been assumed in regard to the functions of the anterior lobe will have to be held *sub judice*. The chemical nature of the specific substance or substances formed in the gland is entirely unknown. There remain the conclusions based on the experiments made by injecting the extracts and on the evidence furnished by pathology. In the hands of many observers making use of different animals, from the protozoa to the mammals, administration of extracts of anterior lobe has caused an acceleration in growth and metabolism. Specific effects have been described, such as those obtained by Smith and Smith on tadpoles. In these animals, hypophysectomy is followed by a decrease in the rate of growth, atrophy of the thyroid and of the suprarenals (interrenal gland) and lack of pigment formation in the pigment cells. Injection of extracts of anterior lobe restores growth to a normal or supranormal rate and reestablishes the functional activity of the other affected tissues. Experiments of this character support the current view that this lobe furnishes a hormone that controls growth, and has some general connection with the activity of the thyroid and the cortical portion of the suprarenal. The pathologic evidence, which correlates gigantism and acromegaly with an enlargement and hyperactivity of the hypophysis falls in with this hypothesis. On the other hand, there is much uncertainty at present regarding the precise effects of removal of or injury to the anterior lobe, and a practically complete lack of information concerning the nature and mode of action of its supposed secretion product. It is obvious that additional work of exact character is needed to clarify our views in regard to the physiology of this structure.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

INTARVIN.—An artificial fat made from fatty acids having an odd number of carbon atoms. Intarvin is composed of the glyceryl ester of margaric acid admixed with small quantities of glyceryl esters of pentadecylic, palmitic and stearic acids, 82 per cent.; liquid petrolatum, 12 per cent.; water, 6 per cent.

Actions and Uses.—Intarvin is proposed for use in diabetes mellitus on the ground that fatty acids containing an odd number of carbon atoms do not yield ketone bodies on oxidation in the normal or diabetic organism, and that for this reason it may with advantage replace the natural fats in the diet. The evidence indicates that intarvin does not increase the production and that it may reduce the production of ketones in certain cases; that it has a protein sparing action; that sugar is formed from it in small amounts only; that it has little, if any, beneficial effect on the carbohydrate metabolism in the human organism; that its unpalatable taste is a drawback to its use, and that it may prove useful in the dietary treatment of diabetes in certain cases. So far, nothing is known of the effects of the prolonged use of intarvin.

Dosage.—From the total number of calories required for the day, the number supplied by the diet is deducted; the remainder is the number of calories per day to be furnished by intarvin. The caloric value of intarvin is 6 calories per gram—approximately 120 calories per heaping tablespoonful.

Intarvin is best taken in its natural granulated form, followed by a drink of water, tea or coffee. It may also be taken mixed with other food, such as salads, coffee, sweet cream or tomatoes.

Manufactured by the Intarvin Co., Inc., Long Island City, N. Y. U. S. patent 1,455,254 (May 15, 1923; expires 1940). U. S. trademark 184,860.

Intarvin occurs as white "lumpy" masses, possessing an unctious feel and with an odor and taste resembling tallow.

Intarvin is readily soluble in chloroform and ether; insoluble in water. In treating intarvin with hot alcohol, the product dissolves, forming two layers, the alcohol solution being the upper layer and liquid petrolatum being the lower layer.

Boil about 1 Gm. of intarvin with 25 Cc. of sodium hydroxide solution; a soap solution results.

Distilled water boiled with intarvin does not acquire an alkaline reaction (*alkalis*).

Dissolve 10 Gm. of intarvin in 30 Cc. of chloroform, mix the solution with 10 Cc. of neutral alcohol, and add 1 drop of phenolphthalein solution as indicator; not more than 2 Cc. of normal sodium hydroxide is required to produce a pink tint after shaking the solution vigorously (*limit of free fatty acid*).

Incinerate about 1 Gm. of intarvin; not more than 0.1 per cent. of ash remains.

Transfer about 2 Gm. of intarvin, accurately weighed, to a tared weighing bottle, and dry in a desiccator over sulphuric acid for seventy-two hours; the loss in weight shall not exceed 6 per cent. (*limit of moisture*).

Transfer about 5 Gm. of intarvin, accurately weighed, to an Erlenmeyer flask, add 20 Cc. of alcohol and 2 Cc. of sodium hydroxide solution (1:1), connect the flask with a reflux condenser and heat for an hour on the water bath. Remove the condenser and allow the flask to remain on the bath until the alcohol is evaporated and the residue is dry. Dissolve the residue as completely as possible in 40 Cc. of water and heat on the bath, shaking frequently. Wash into a separatory funnel, cool and extract with four successive portions of petroleum ether, which are collected in a tared flask. Evaporate the petroleum ether and dry at 100 C. The amount extracted should not be more than 13 per cent. (*limit of liquid petrolatum*).

QUININE ETHYL CARBONATE (See New and Nonofficial Remedies, 1924, p. 267).

Quinine Ethyl Carbonate-P. W. R.—A brand of quinine ethyl carbonate-N. N. R.

Manufactured by Powers-Weightman-Rosengarten Company, Philadelphia. No U. S. patent or trademark.

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SATURDAY, NOVEMBER 22, 1924

THE RESOURCES AGAINST EXPOSURE TO HEAT

Among the environmental influences that play a part in affecting man's fitness for his daily tasks, temperature is admittedly important. The ability of the body to adapt itself to wide variations and pronounced extremes of heat and cold is a familiar fact. However, the capacity for adjustment is by no means unlimited, so that the stress may sometimes become too severe and serious harm may result. In addition to subjection to warm atmospheres as the result of climatic conditions, such as occurs with many outdoor workers in summer weather, exposure to excessive heat is common in the case of workmen in certain industries. Sometimes the exposure involves subjection to radiant heat that may produce characteristic effects on the skin; in other cases it is a highly heated atmosphere more or less laden with humidity that represents the menace. Heat stagnation has long been recognized as a serious detriment to human fitness. There are, accordingly, industrial as well as more purely scientific reasons for learning the nature of the bodily defenses against high environmental temperatures, that the most advantageous conditions may be instituted to combat them physiologically in steel mills, kitchens, laundries or other places of employment where heat is an inevitable factor in the daily life of man.

In exposure to high temperatures for a considerable time, the physiologic manifestations that are liable to become detectable, particularly when the body temperature reaches a critical point, include a concentration of the blood due to the excessive evaporation of body water; an increased oxygen capacity, which can be explained by the concentration of the blood; a slightly increased oxygen content of the blood, due to an increased lung ventilation; a rapid fall in carbon dioxid content and capacity; an increased p_H (alkalosis), due to an excessive pulmonary ventilation, with a concomitant washing out of the carbon dioxid, and without a compensatory loss of alkali from the blood. These are the forerunners or concomitants of incipient heat exhaustion. As Barbour [1] has pointed out, equalization of temperature in living organisms is best attained through the presence of a mobile constituent that can circulate freely and rapidly. Water, above all other liquids, is fitted for such temperature equalization and regulation; and the recognition of its importance in this respect deserves to be more widespread. In warm environments, water is brought to the surface and literally poured freely over the cutaneous areas. The loss of heat from the body through evaporation is a most effective device for preventing overheating.

This heat-dissipating arrangement necessarily is also a water-shifting arrangement. Obviously, both evaporation and radiation are favored by an increased blood flow through the skin. According to the older views, vasomotor shifts of blood to the surface at the expense of the interior were chiefly responsible for the increased surface blood flow, but it now appears that the value of these shifts may be much enhanced by augmented blood volume, brought about by rapid dilution.[2] The water thus made available serves in the evaporation and radiation processes. Dilution of the blood may be a response of the organism to stimulation by heat; but, obviously, a situation may arise in which the water contributed by the blood can no longer be replaced, whereupon a concentration of the circulating medium and other untoward symptoms are destined to arise. There is said to be a fairly high factor of safety, for it is not until the concentration of the blood approaches 25 per cent. that pathologic symptoms occur from this cause.[3] They would doubtless be averted more frequently if the limitations of the water sources in the body were better appreciated. The great storehouse of the body water, according to Engel,[4] is the muscles, which contain, from his observation, two thirds of the total amount of water in the body. Physiologists have asserted that the muscles may lose as much as 10 to 20 per cent. of their water without harm, yet a slight desiccation of the blood will impair the circulation. Any impairment of the circulation may effect functional disturbances in almost every part of the body. If the impairment of the circulation reaches the point at which it results in a diminution in the pressure and volume of the venous stream, it may bring about cardiac failure as the immediate cause of death.

To prevent disaster in periods of thermal stress, obviously water must be made available in the organism either through its release from the tissues, such as the muscles, or by water intake. How rapidly beneficial the latter may be in a high environmental temperature has been demonstrated by Flinn [5] of the United States

1. Barbour, H. G.: The Heat-Regulating Mechanism of the Body, Physiol. Rev. **1**: 295 (April) 1921.
2. Barbour, H. G.: Arch. f. exper. Path. u. Pharmakol. **70**: 1, 1912; J. Pharmacol. & Exper. Therap. **14**: 65 (Sept.) 1919; Acetylsalicylic Acid and Heat Regulation in Fever Cases, Arch. Int. Med. **24**: 624 (Dec.) 1919.
3. Flinn, F. B., and Scott, E. L.: Some Effects of Various Environmental Temperatures on the Blood of Dogs, Am. J. Physiol. **66**: 191 (Sept.) 1923.
4. Engel: Arch. f. exper. Path. u. Pharmakol. **51**: 346, 1904.
5. Flinn, F. B.: Some Observations on the Effect of Increased Air Movement and Water Intake on the Dog During an Exposure to High Environmental Temperature, Am. J. Physiol. **70**: 194 (Sept.) 1924.

Public Health Service. When water is drunk freely there may be an entire absence of the rise in temperature, concentration of the blood, and changes in the alkali reserve that are seen under otherwise comparable conditions without ingestion of water. It is clear why Hill has repeatedly warned against a water loss of more than 10 per cent. of the body weight. Increased air movement, so much lauded in modern schemes of ventilation, may prove temporarily beneficial to the organism if the exposure to heat is not too prolonged. It appears to delay the rise in body temperature until that point is reached at which the water-regulating mechanism can no longer keep pace with the increased rate of evaporation. The main benefit of this increased air movement lies in the fact that it is constantly changing the immediate layer of saturated air that surrounds the body and thus prevents evaporation. But such benefit is at the expense of the organism itself. Flinn's studies serve to bring into prominence the outstanding fact that the free drinking of water during an exposure to high air temperature is of the greatest benefit in maintaining the organism in a normal condition.

ALCOHOL AND HUMAN EFFICIENCY

Five years ago, Dr. Abraham Jacobi,[1] sponsoring a popular treatise called "The Whole Truth About Alcohol," remarked that the temptation for lay prohibitionists is their ignorance. They do not know or they ignore the fact that the most positive and strongest medicines may exhibit antagonistic features. At the beginning of the last century of medicine, for instance, he adds, they had prolonged discussions about opium. They knew that opium was a depressant, even a narcotic; they also fought for opium as a stimulant—"non sedat, mehercle non sedat." So was alcohol a stimulant (or irritant) in some places, whereas in other gospels it was a depressor, a paralyzer. The "whole truth" about alcohol has by no means been completed for formulation, however, with the pharmacologist's decision as to whether the much debated substance is a stimulant or a depressant. The question as to whether or not it is in any sense a real food has been bandied about for a generation or more without attaining an absolutely unequivocal answer. The scientific controversy has not centered primarily about the consequences of the excessive consumption of alcoholic beverages, for it is frankly admitted that grave and widespread social evil follows in its train. The debatable features have rather been concerned with the alleged effects of the so-called moderate use of alcohol aside from a concern for the social issues of drinking. But so long as persons of respectability continue to quote Horace to the effect that "it takes wine to stimulate the poet" and that "no poem written by a water drinker lives a long time," it seems worth while to consider more carefully not merely the physiologic, pharmacodynamic or toxicologic aspects of the action of alcohol, but also the psychologic consequences of its ingestion.

In referring to this feature of the subject, Lord D'Abernon[2] has well remarked that complication in arriving at the true effect of alcohol on performance arises from the fact that, while alcohol gives the drinker the impression that he has performed the allotted task with unusual facility and success, impartial and objective examination of the performance shows—almost invariably in cases in which the higher faculties are concerned—that both accuracy and regularity have fallen below the normal standard. Self satisfaction has been increased, but neither skill nor power. The extreme caution, D'Abernon adds, which these considerations impose on students detracts from the brilliancy and certainty of any deduction from experiments, and tends therefore to render research less attractive than in other directions.

Information increases in accuracy when it is derived objectively, so that it can be dissociated from personal bias. A particularly valuable study of this type is presented in the elaborate investigation at the Boston Nutrition Laboratory of the Carnegie Institution of Washington regarding the influence of ethyl alcohol on human efficiency. The recent report[3] of observations on trained typists and others who received alcohol in doses of from 21 to 42 gm. in solutions of varied strengths gives clear-cut answers. Within the first two hours after ingestion of the smaller doses (less than 30 gm.), for the pulse rate during rest and during work, the metabolism and the skin temperature, the alcohol effect is in the direction of increase as these factors are usually measured. Unless a specific dynamic action for alcohol be assumed, these changes, which definitely occur under the carefully controlled and routine conditions of the experiments, apparently represent a decrease in organic efficiency due to depressant action of ethyl alcohol, as they are regularly associated with decreased reflex irritability, slower reaction, less keen, i. e., higher sensory thresholds, slower muscular movements, less adequate and accurate muscular control, and less agile mental operations. The whole qualitative picture, the report proceeds, is one of decreased human efficiency as a quickly following result from the ingestion of this pharmacodynamic substance.

It is significant to note that the effect of some of the dosages was studied by giving the alcohol in solutions of the vaunted 2.75 per cent. beverage strength. From the psychologist's standpoint, the factor of accu-

1. Jacobi, Abraham, in introduction to Flint, G. E.: The Whole Truth About Alcohol, New York, the Macmillan Company, 1919.

2. Advisory Committee of the Central Control Board: Alcohol: Its Action on the Human Organism, New York, Longmans, Green & Co., 1918.

3. Miles, W. R.: Action of Dilute Alcohol on Human Subjects, Proc. Nat. Acad. Sc. **10**: 333 (July) 1924. The full report appears in "Alcohol and Human Efficiency," Pub. 333, Carnegie Institution of Washington, 1924.

racy or adequacy of response was more prominently influenced by alcohol than was the factor of speed. Those coordinations which made a continuous demand on the subject exhibited a stronger effect than did the discontinuous type of task. In the typewriting investigation, it was discovered that with successive series of experiments on the same men, i. e., the mere repetition of the routine, the alcohol influence in multiplying errors and diminishing the legibility became more pronounced. The taking of food just before or with the alcohol caused a marked decrease in the intensity of effect.

It has long been suspected by physiologists that alcohol effects, like those of many drugs, are closely related to the concentration of the potent substance that circulates as such in the organism. In the case of alcohol, its partial elimination by the kidneys parallels closely the concentration in the blood and thus presumably in other body fluids. In the Boston experiments, the relationship of alcohol effect to the alcohol appearing in the body fluids (as represented in the urine taken at thirty minute intervals) was directly and objectively investigated probably for the first time with human subjects. It was found that the man who showed the highest average concentration also demonstrated the strongest alcohol effect, and likewise for the lowest concentration and least effect. There was a fairly parallel ranking agreement for the subjects between these extremes. Rate of absorption and body weight are regarded as obviously important factors here. The subject, who was well trained in the measurements and routine, demonstrated the strongest alcohol influence in the series in which his highest average urine-alcohol concentrations occurred, with fairly good agreement down to the least effect and the lowest urine content.

The carefully formulated report of the representative Advisory Committee of the Central Control Board in England long ago ventured the formal statement that the habitual use of alcohol as an aid to work is physiologically unsound. It seemed to these British experts permissible to suppose that the greater the precisional delicacy and alertness demanded in a muscular act and the greater its degree of difficulty, e. g., by reason of novelty to the performer, the more liable will that act be to show impairment under the influence of alcohol, and, within limits, the smaller will be the dose of alcohol that may impair the act. With this conclusion, the latest American evidence seems essentially to be in accord. Of course, it does not solve the question as to whether alcohol is really necessary to supply the spark of creative genius in the less material fields of human endeavor. The partisans will therefore probably not soon be deprived of a field in which they may continue to support their preconceived opinions, even when the controversy about alcohol and longevity has ceased to rage.

HEXAMETHYLENAMIN AND SYSTEMIC ANTISEPSIS

An early and obviously logical sequence of the discovery of bacterial factors in infectious diseases and localized infections was the desire to find a systemic antiseptic that would readily penetrate to the microbial invaders and destroy them in the tissues without undue damage to the latter. It was hoped to accomplish such a remedial action by means of a chemical compound that could be introduced into the organism either orally or, if need be, intravenously and thus be brought to bear directly on dangerous bacteria, either in the blood or in the organs of the body. Like the earlier attempts to "disinfect" the alimentary tract through ingestion of selective germicidal substances, the more pretentious efforts to render the entire organism free from micro-organisms by a similar therapeutic procedure have not been attended with conspicuous success. The use of immune serums and comparable products having specific antitoxic potency has rapidly developed, while the hope of securing other modes of direct chemical antisepsis has slowly faded.

One drug—hexamethylenamin—was early hailed as a compound promising success in such endeavors. Since its recognition in 1894 as a beneficial substance in the treatment of vesical conditions, it has been recommended as an antiseptic agent for virtually all the body fluids, largely on the basis of the fact that after internal administration the drug may be found present everywhere in the body. To this circumstance is added the advantageous feature that hexamethylenamin is practically nontoxic. It is an established fact, however, that this substance as such is not bactericidal. More than ten years ago, Hanzlik and Collins [1] clearly demonstrated that bacterial growth is not prevented by it even in proportions much higher than could obtain anywhere in the body. This important evidence, secured with the aid of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association, early made it improbable that administration of hexamethylenamin can exert marked antiseptic effects in the tissues, although a partial restraining action was not excluded.

In an acid solution, hexamethylenamin disintegrates into ammonia and formaldehyd. The latter substance is admittedly germicidal, and to it doubtless are due the beneficial therapeutic results experienced in the treatment of urinary infections; for the urine usually develops an acidity favorable to the desired reaction, liberating formaldehyd. The latest effort, by De Eds [2] of the Stanford University Medical School, to discover an unsuspected comparable change in the migration of hexamethylenamin through the blood and tissues has

1. Hanzlik, P. J., and Collins, R. J.: Hexamethylenamin: The Liberation of Formaldehyd and the Antiseptic Efficiency Under Different Chemical and Biologic Conditions, Arch. Int. Med. **12**: 578 (Nov.) 1913.
2. De Eds, F.: Fate of Hexamethylenamin in the Body and Its Bearing on Systemic Antisepsis, Arch. Int. Med. **34**: 511 (Oct.) 1924.

yielded only negative results. He failed, it is true, to secure in the excretions a complete recovery of all the drug administered; but the variable small deficit is presumably accounted for by loss of the drug; that is, by hydrolysis or decomposition, in the alimentary tract, largely in virtue of gastric acidity, which is variable. The formaldehyd liberated in the stomach is not absorbed. The decomposition of the drug in the tissues, as indicated by the excretion of formic acid, is very small, and accounts for only a very small fraction of the loss. Indeed, the concentration of formaldehyd liberated is so extremely small that it cannot be considered of any therapeutic importance so far as producing antiseptic action is concerned. It follows, therefore, that the alleged beneficial effects from hexamethylenamin systemically in various infectious diseases cannot be explained on the presence of adequate liberation of formaldehyd in the circulation and tissues. The drug itself is not antiseptic; and the hope of securing systemic antisepsis through its use still seems forlorn. Its one field of action seems to be in pathologic conditions in the urinary tract, and it is necessary that the urine be markedly acid if the drug is to act efficiently.

Current Comment

THE FATE OF INSULIN IN THE ALIMENTARY TRACT

The value of insulin in diabetes has become thoroughly established clinically as well as experimentally, although scarcely more than two years had elapsed since the original publication of Banting and Best on this hormone. Foremost among the facts established is our knowledge that insulin is, as Joslin has cleverly expressed it, a remedy primarily for the wise and not for the foolish, be they patients or physicians. Insulin may be death-dealing when an overdose is administered; yet it gives a warning train of symptoms that usually permit the educated patient to avert an untoward outcome. Again, insulin, which is a product potent for ill as well as for good, apparently does not cure diabetes; consequently, its administration may become a necessity that extends not merely over days or weeks but even over years without interruption. In view of the latter circumstance, the necessity of introducing the hormone into the body intravenously or subcutaneously presents a problem of real seriousness. It was inevitable, therefore, that early in the history of insulin therapy attempts should have been made to give the substance by mouth. Nearly all such trials have resulted in total failure, though a few apparent successes have been reported.[1] An explanation of the failure to secure potency through the alimentary path might lead to successful effort to overcome the inhibitory or destructive factor, whatever it may be. Heretofore the ineffectiveness of insulin given by mouth has been charged to the destruction of the hormone by the proteolytic action of the alkaline pancreatic secretion with which it comes into contact in the bowel. Indeed, Murlin has attempted to circumvent this by administering the insulin in an acid medium so as to inhibit possible tryptic action. Studies of Epstein and Rosenthal[2] at the Mount Sinai Hospital, New York, suggest, however, that trypsin does not digest insulin as is currently assumed, but combines with it to form an inactive product. The effect is not one of cleavage or real destruction. The combination is permanent under a certain set of conditions, and is dissociated under others. It is noteworthy in this connection that, whereas insulin becomes promptly inactivated by trypsin, the latter suffers no change, in respect either to its proteolytic or to its rennet action, from the contact. Contrary, further, to the present beliefs is the evidence of the New York observers that insulin is virtually indestructible and is merely rendered physiologically inert by trpsin. The reaction can be produced in vivo as well as in the laboratory test tube. Epstein and Rosenthal assert that larger amounts of trypsin are needed to produce this effect than in the in vitro experiments; but that is as it should be, if we take into consideration all the conditions that surround such an experiment. This inactivation in vivo is, however, subject to special conditions. When the injection of the two substances is made in close chronological order with the trypsin preceding the insulin, the inactivation takes place. When, however, the injections are made in the reverse order, or at long intervals, the inactivation is incomplete, manifesting itself by a delay in the exhibition of the physiologic reactions of insulin. The inactivation of insulin by trypsin in vivo is not due to any neutralizing hyperglycemia incidental to the administration of trypsin, because trypsin alone does not produce any significant rise in the blood sugar. Here are studies in the behavior of insulin, which, if substantiated by further research, constitute a most important contribution. At the same time it is well to remember that an examination of the most widely heralded antidiabetic pancreatic preparations showed that not one had any definite and regular effects on blood sugar or glycosuria when given by mouth.

THE AMERICAN BOARD OF OTOLARYNGOLOGY

Representatives appointed by the several national organizations devoted to otolaryngology have recently perfected details of organization for carrying on the work of the American Board of Otolaryngology. The object of this board is the elevation of standards in this specialty by encouraging men who desire to take up this work to seek proper preparation. The board will pass on the qualifications of those who apply for examination and issue certificates to such applicants as meet the proper minimal requirements. These certificates, it is believed, will serve the double purpose of educating physicians to a better appreciation of what should be undertaken in the way of preparation

1. The status of these attempts is reviewed in a recent paper by Maxwell, L. C.; Blatherwick, N. R., and Sansum, W. D.: The Absorption of Insulin from the Alimentary Canal, Am. J. Physiol. **70**: 351 (Oct.) 1924.

2. Epstein, A. A., and Rosenthal, N.: Studies on the Relation of the External to the Internal Secretion of the Pancreas, I, Biochemical Study on the Nature of the Action of Trypsin on Insulin, Am. J. Physiol. **70**: 225 (Oct.) 1924.

and of assisting the public in discriminating between the man properly prepared and the one who, without sufficient preparation, is willing to pose as a specialist in otolaryngology. The national organizations devoted to otolaryngology—the American Otological Society, the American Laryngological Association, the American Laryngological, Rhinological and Otological Society and the American Academy of Ophthalmology and Otolaryngology—hereafter will require of applicants for membership the possession of the certificate from the American Board of Otolaryngology before their names can be brought up. The need for some proper standard by which the trained otolaryngologist may be recognized is apparent. The certificate is an assurance that the holder has met the proper minimal requirements. The rapid expansion of medical knowledge has necessitated the development of specialties to an extent that could not have been foreseen a few years ago. Facilities for educating men for special practice have not kept pace with the expansion of these specialties. The establishing of national boards for the special fields similar to the American Board of Otolaryngology should stimulate our educational institutions to take a more active interest in the outstanding problem in medical education today, namely, the problem of providing adequate graduate training for men who have completed the undergraduate medical course and who desire to take up practice in one of the specialties.

SUPRARENAL FUNCTION AND VIGOR

Ever since the days of Addison,[1] to whom we owe some striking descriptions of the effects of disease of the suprarenal capsules, as he called them, there has been a vague appreciation that loss of their function may be attended with decrease in physical vigor. To the clinician, languor and diminution of muscular tone are readily recognized accompaniments of suprarenal disturbance, so that one may speak of a conjectured "suprarenal adynamia." In the search for the possible involvement of endocrine organs in a variety of as yet ill defined deviations from normal human physiologic behavior, attempts have often been made to secure experimental conditions in which underfunction of the suspected structures is established. Thus, the partial ablation of the pancreas may or may not bring about a hyperglycemia and its concomitant disturbances —depending on the extent to which the glandular tissue is removed; and the experimental diabetes established by pancreatectomy has afforded a satisfactory condition for the study of disorders of carbohydrate metabolism. In the case of the suprarenals, the attempts to imitate Nature's pathologic defects have heretofore been less illuminating. The species of animals investigated seem, as Durrant [2] has pointed out, to be subject to a sort of all-or-none law. If less than about one sixth of the suprarenal tissue is removed, hypertrophy of the remaining portion occurs and the animal remains apparently normal. If the suprarenal tissue is reduced below a certain critical amount, death promptly ensues. In recent studies at the Ohio State University, however, Durrant has succeeded in maintaining suprarenalectomized rats in apparent health over considerable periods of time. On superficial observation, they appeared to be normally alert and active; but over a period of hours or days, they manifested markedly diminished activity. The latest evidence clearly supports the clinical assumption that suprarenal deficiency may become responsible for muscular depression and abnormal fatigability, and thus the suprarenals may have a significant part in the maintenance of that successful interplay of reactions somewhat vaguely described as vigor.

1. Addison: On the Constitutional and Local Effects of Disease of the Suprarenal Capsules, London, 1855.
2. Durrant, E. P.: Studies on Vigor, I, Effect of Adrenal Extirpation on Activity of the Albino Rat, Am. J. Physiol. **70**: 344 (Oct.) 1924.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Lecturers for County Societies.—In response to the request of the secretary of the California Medical Association for lecturers for county societies, forty members of the state association have responded. The list, as published in *California and Western Medicine*, will be sent to the secretaries of all county societies. The number of subjects listed is 153.

Personal.—Dr. Lela J. Beebe, Woodland, has been appointed to the bureau of child welfare.——Dr. George B. Worthington was recently elected city health officer of San Diego, vice Alexander M. Lesem, resigned.——Dr. Dwight M. Ervin, San Francisco, has resigned as pathologist to the St. Francis Hospital, San Francisco, to enter private practice, and Dr. Adelbert M. Moody, formerly of Chicago, has been appointed to succeed him.——Dr. John R. O'Neill has been appointed in charge of the newly installed electrocardiograph service at the St. Francis Hospital.

Plague at Los Angeles.—Although the pneumonic plague in Los Angeles is believed to be under control, the federal government has thrown the resources of the U. S. Public Health Service against the pestilence, and warned all American port authorities and foreign governments as well. Cablegrams have gone to all points of the world with accurate reports under the provisions of international sanitary conventions. Officials of the U. S. Public Health Service do not conceal their concern over pneumonic plague which, they said, was "most acute"; at the same time they believe the possibility of its spread is now "remote." Dr. James C. Perry, who has been ordered from San Francisco to Los Angeles, is in control of the service's work there in striving to stamp out the plague. Squirrels and rats are being captured all along the California coast by trained men of the U. S. Public Health Service and sent to the laboratory at San Francisco for examination.

CONNECTICUT

Personal.—Dr. Harold W. Hersey, formerly superintendent of the New Haven Hospital, New Haven, has accepted the superintendency of the Bridgeport Hospital, Bridgeport.

DELAWARE

The Wilson Case.—A chiropractor of Wilmington by the name of H. L. Wilson was arrested, February 23, on a charge of practicing medicine without a license. Wilson's counsel had the case continued in municipal court and the defendant was held to the upper court. Physicians offered evidence and the services of counsel to the attorney general, but, the *Atlantic Medical Journal* says, the attorney general's reply was rather noncommittal. There was a feeling that the Wilson case would never be "pushed," and, "true to form," the case was stricken from the docket at the September term. This journal states that the excuse of the attorney general for not acting was the flimsiest imaginable, namely, that since there is no law licensing chiropractors in this

state, chiropractors are not able to secure licenses. The editor draws attention to the fact that the charge was not that of practicing chiropractic without a chiropractic license but of practicing medicine without a medical license. He says it is not charged that the attorney general has been fixed in this case, but with the law as plain as the nose on one's face, a better reason for not prosecuting Wilson than the one given is demanded.

DISTRICT OF COLUMBIA

St. Elizabeth's Hospital Approved for Training Interns.—The Council on Medical Education and Hospitals of the American Medical Association has announced that the St. Elizabeth's Hospital, Washington, under supervision of the Interior Department, has been approved for the training of interns. The instruction of interns at St. Elizabeth's Hospital will be supplemented by instruction in obstetrics and pediatrics at the Garfield Hospital in Washington, with which affiliations have been made.

FLORIDA

Personal.—The governor has appointed Dr. Samuel G. Hollingworth, Bradentown, a member of the state board of medical examiners, to succeed Dr. Ralph N. Greene, Jacksonville, resigned.

Florida in Birth Registration Area.—Florida has been admitted to the U. S. Birth Registration Area, the federal test having been completed early in October. Birth registration in Florida is thus recognized as more than 90 per cent. complete. Birth records for the current year will be accepted in Washington, D. C., as part of the census reports for 1924.

GEORGIA

Personal.—Dr. Thomas B. Gay, Jr., New York, has been named director of the medical service for the child health demonstration at Athens.

ILLINOIS

Physician Held to Grand Jury.—Dr. Edwin W. Stubbs, Aurora, it is reported, was recommended by a coroner's jury, October 27, to be held to the grand jury for criminal abortion until discharged by due process of law. The verdict followed an investigation of the death of Mrs. Gasper, October 25.

Society News.—At the meeting of the Adams County Society, November 10, Dr. Jacob C. Krafft, Chicago, president-elect of the Illinois State Medical Society, addressed the society on "The Subnormal and Criminal Child," and B. C. Kellar, Chicago, director of publicity, Illinois State Medical Society, on "The Work of the Lay Education Committee of Illinois State Medical Society."

Medical Society Meets to Consider Scarlet Fever.—At the request of the city board of health, the Kankakee Medical Society held a special meeting, November 7, to consider the scarlet fever epidemic in that city. Following a general discussion, the society recommended, it is reported, that:

1. Full publicity be given the epidemic in local papers, that the community may know that scarlet fever is increasing and out of control.
2. Parochial schools provide a full time graduate nurse to look after their 1,500 children.
3. A committee of three members be appointed to act with the city board of health in checking the epidemic.
4. Parents should be informed that scarlet fever is very contagious, often fatal, and frequently maims for life, and unless the parents honestly cooperate in maintaining strict quarantine and helping the board of health, all efforts are futile.
5. When a child has sore throat, fever, or rash of any kind, a physician should be called at once.

Chicago

Hospital News.—Bids were taken about November 15 for the proposed $250,000 addition and alterations to the Presbyterian Hospital.

Personal.—Dr. Frank Smithies, professor of medicine, University of Illinois School of Medicine, Chicago, gave a diagnostic clinic before the Sangamon County Clinical Association, at St. John's Hospital, Springfield, November 6, and in the evening addressed the Sangamon County Medical Society on "Results Following Non-Surgical Management of Peptic Ulcer by the 'Physiologic Rest Method.'"

Society News.—Under the joint auspices of the department of physiology, University of Chicago, and the Institute of Medicine of Chicago, Dr. W. Einthoven, professor of physiology, University of Leyden, and originator of the string galvanometer, gave a public lecture on "The Electrical Changes in the Beating Heart" at Kent Theater, University of Chicago, November 12.——Drs. Arthur Dean Bevan and Michael Goldenburg will speak at the diagnostic clinic of the Chicago Medical Society, November 26.——At the twenty-fifth anniversary of the Chicago Laryngological and Otological Society, Auditorium Hotel, December 1, reminiscences of the first ten years of the society will be given by Drs. Frank Allport, William A. Evans, Otto T. Freer, Thomas M. Hardie, Jacques Holinger and Otto J. Stein; of the last fifteen years, by Drs. Albert H. Andrews, Joseph C. Beck, Elmer L. Kenyon, Charles M. Robertson and George A. Torrison. Dr. George E. Shambaugh will speak on "The Future of the Society."

INDIANA

Scarlet Fever Closes Schools.—The county health commissioner announced, November 9, that, owing to the continued prevalence of scarlet fever in Lancaster Township, the order closing the Lancaster Township schools would remain in effect for at least another week.

IOWA

The Prevention of Heart Disease.—The American Heart Association has appointed a committee of physicians in Des Moines to develop the work of prevention and relief of heart disease in Iowa. The members are Drs. Walter L. Bierring, Addison C. Page, John H. Peck, John Russell and Merrill M. Myers. A clinic, in charge of Drs. Myers and Russell, has been established in connection with the Des Moines health center. The committee proposes to aid in the organization of a Des Moines heart association.

Society News.—At a meeting of the Linn County Medical Society, October 9, Dr. Charles S. Williamson, professor of medicine, University of Illinois Medical Department, Chicago, gave an address on "The Management of the Commoner Forms of Heart Disease"; at the September 11 meeting, Dr. Robert E. Farr, Minneapolis, on "Major Operations Under Local Anesthesia"; at the November 13 meeting, Dr. Ernest E. Irons, dean of Rush Medical College, Chicago, on "Acute and Chronic Local Infection as a Cause of Systemic Disease." At the December 11 meeting, Dr. William McKim Marriott, St. Louis, and Dr. Harry Culver, Chicago, will speak. The January 8 meeting will be a skin clinic in the afternoon, and a lantern demonstration at night by Dr. Richard L. Sutton, Kansas City, Mo.——Dr. Louis A. Buie of the Mayo Clinic, Rochester, Minn., addressed the Scott County Medical Society, Davenport, October 7, on "Proctology in General Practice."——Dr. John S. Lundy of the Mayo Clinic, Rochester, Minn., will address the Webster County Medical Society, November 25, on "Ethylene Anesthesia." Dr. Fred M. Smith, professor of medicine, State University of Iowa College of Medicine, Iowa City, addressed the society, November 11, on "The Prognosis of Chronic Valvular Heart Disease."——At a complimentary dinner given by the Iowa Methodist Hospital to the Des Moines Academy of Medicine, November 1, Dr. Walter E. Dandy of the Johns Hopkins Hospital, Baltimore, gave an address on "The Localization of Brain Tumors." New officers of the academy were elected as follows: Drs. Ralph H. Parker, president; Fred Moore, vice president, and Merrill M. Myers, secretary.

MARYLAND

University News.—Dr. A. H. Ryan, formerly professor of physiology at Tufts College Medical School, Boston, has been appointed professor of physiology at the University of Maryland School of Medicine and the College of Physicians and Surgeons, Baltimore.

Health Clinics Held.—Twenty tuberculosis clinics were held in as many counties during October under the direction of Dr. John M. Nicklas of the state department of health. A welfare and preschool clinic for children under 6 years of age has been started by the Baltimore City Health Department at school No. 65.

Book and Journal Club.—The first meeting of the season of the Book and Journal Club of the Medical and Chirurgical Faculty was held in Osler Hall, November 18. Dr. Henry J. Berkley presented an old miniature of Dr. John Ridgely of Annapolis. Dr. Henry L. P. Naylor spoke on "Reminiscences of My Student Life at the University of Maryland, 1858-1860." Dr. William H. Welch exhibited some recently acquired diplomas and certificates of Dr. George Buchanan. The Book and Journal Club is an integral part of the faculty meetings. Dr. Harry Friedenwald is president and Dr. Joseph A. Chatard, secretary.

School to Lower Cost of Nursing.—Definite plans to establish a training school for nurses at Bay View were formulated by the board of supervisors of city charities, recently. The plan is proposed to remedy the present shortage of nurses and to lower the existing rates about one half. The school is expected to provide:

1. A sufficient number of nurses for both Bay View and the public.
2. Trained practical nurses to families of moderate means at $20 or less a week. Present rates are $35 and $40 a week and board.
3. Opportunity for girls to be paid $10 a month with board, lodging and uniform while in training.
4. A thorough training in two years.

It is planned to open the school at Bay View, April 1, 1925. The board will be asked to create a position of instructress of nurses. Those supporting the project say provision for this work will be the only additional expense to Baltimore that the school will occasion.

MASSACHUSETTS

A Million for a Middle Class Hospital.—A million dollars has been bequeathed to the Massachusetts General Hospital by the will of Mary R. Richardson, Newport, R. I., to be used for the construction of a branch hospital or ward for the treatment of persons of limited means—a so-called middle-class hospital. The new hospital will be a memorial to Mrs. Richardson's parents, whose name was Baker.

Physicians' Bureau in Chamber of Commerce.—A bureau of physicians and surgeons has recently been established in the Worcester Chamber of Commerce, which maintains a twenty-four hour service daily in order that members of the bureau may be kept in touch with their patients at all times. The affairs of the bureau are administered by a board of directors, consisting of Dr. Arthur W. Marsh, chairman, Dr. Edwin R. Leib, Dr. Joseph W. O'Connor, Dr. Roger W. Schofield, and Dr. John E. Talbot, all of whom are Fellows of the American Medical Association.

Personal.—Dr. Ransom H. Sartwell has resigned as assistant superintendent of the Worcester State Hospital, Worcester, to become superintendent of the Rhode Island Infirmary, at Cranston, R. I.——Edwin G. Boring, Ph.D., associate professor of psychology at Harvard University, Boston, has been appointed director of the psychologic laboratory.——George C. Whipple, B.S., Gordon McKay professor of sanitary engineering, Harvard University, Boston, has been commissioned directing sanitary engineer with the grade of assistant surgeon general in the U. S. Public Health Service reserve.——Drs. William D. Rowland and Joseph E. Sternberg have been appointed assistant professors in clinical ophthalmology at the Boston University School of Medicine, Boston.

George Robert White Fund Health Unit Dedicated.—The first health unit built from the income of the George Robert White Fund was dedicated, November 1, at Baldwin Place in the north end of Boston. Mr. White's bequest to the City of Boston amounted to more than $5,000,000, and specified that the money be used to create "works of public utility and beauty." The committee acting as trustee of the fund, the mayor was a member, agreed that nothing would be more fitting and in accord with the wishes of Mr. White than the improvement of public health in congested parts of Boston. The new building is admirably adapted to health center work. There is an auditorium on the second floor seating 250, recreational facilities for children on the roof, dental clinics on the first floor and offices for periodic health examinations, including fluoroscopic and roentgen-ray work. Dr. Charles F. Wilinsky will be in charge. Among the speakers at the dedication were Dr. George E. Vincent, president of the Rockefeller Foundation, Dr. Charles W. Eliot, president emeritus, Harvard University, Dr. Haven Emerson, professor of public health at Columbia University, New York, and Dr. David Edsall, dean of Harvard Medical School, Boston.

MICHIGAN

Chiropractor Sentenced.—Elmer McMullen, chiropractor, Fremont, convicted in circuit court of practicing without a license, was sentenced to serve three months in the county jail and to pay a fine of $200, it is reported. In default of paying the fine, the jail sentence is to be extended three months.

Society News.—Dr. Charles A. Elliott, professor of internal medicine, Northwestern University School of Medicine, Chicago, addressed the Kent County Medical Society, Grand Rapids, November 12, on "The Treatment of Goiter" (with lantern illustrations).——Dr. Reyn, originator of the Finsen-Reyn therapeutic lamp and head of the Finsen Light-Therapy Institute, Copenhagen, will address the Wayne County Medical Society, Detroit, December 1.——Dr. Allen B. Kanavel, Chicago, professor of surgery, Northwestern University Medical School, addressed the Detroit Academy of Surgery, October 9, on "Trigeminal Neuralgia."

MINNESOTA

Smallpox in Minnesota.—There had been 397 cases of smallpox in Minneapolis up to November 3, on which date there were 120 cases. The number of deaths has been forty, twenty-six occurring in October. Only five of those who died had ever been vaccinated, and four of them more than thirty years ago, the other fourteen years ago. As a result of appeals to the public, 400,000 residents of Minnesota have been vaccinated within a month, 200,000 in Minneapolis.

State Medical Meeting.—The house of delegates of the Minnesota State Medical Association, at the recent annual meeting in St. Cloud, again considered the appointment of a full-time executive secretary. Such appointment was considered desirable but prohibitive without a substantial increase in membership dues, to which there was considerable opposition. The matter of appointing a full-time executive secretary was left, therefore, to a committee appointed by the council. The total registration at the St. Cloud meeting was 310. The total membership of the state association is 1,952. The house of delegates recommended that there be more combined meetings and more clinical presentations next year at Minneapolis.

MISSISSIPPI

Another "Benevolent" Quack.—"Dr." S. Chisom, Plaquemine, La., dropped off at Yazoo City, November 1, and soon was arrested for practicing medicine without a license, it is reported. The defendant is said to have stated that he travels throughout the land in response to letters from persons who request assistance, and "puts no price on his goods," being paid "voluntarily." Chisom is tall, graceful, well-dressed. He carried a cane. Among many other articles which he displayed at the request of the mayor, were "a bone from the left hind leg of a calf," a horseshoe wrapped in red cloth, four boxes of incense, a textbook on herbs, boxes of beads, roots and numerous bottles containing liquids. Chisom was fined $150, it is reported, and, being unable to pay, went to jail.

MISSOURI

Society News.—Dr. William J. Mayo, Rochester, Minn., addressed the St. Louis Medical Society, November 6, on "A Surgeon's Interest in Studies of the Blood."——At the general meeting of the St. Louis Medical Society, November 11, seven papers were contributed by the pediatric staff of St. Louis College of Physicians and Surgeons, St. Louis.

NEBRASKA

Grand Jury Releases Physician.—It is reported that Dr. George R. Gilbert, Omaha, who was arrested in July on a charge of violating the Harrison Narcotic Law, was released by a federal grand jury in Council Bluffs, October 31, the grand jury finding no foundation for the charge. The bond under which Dr. Gilbert was placed was also released.

NEW HAMPSHIRE

Scarlet Fever Epidemic.—At a conference, November 7, the health officer of Manchester reported that the isolation hospital was filled to capacity with scarlet fever patients and that an appropriation of funds was necessary to make temporary arrangements providing for other victims of the epidemic, the worst the city has encountered since 1889, it is reported.

NEW JERSEY

Scarlet Fever at Bergenfield.—There is an epidemic of scarlet fever in the borough of Bergenfield. Thirty cases from that community are under treatment at the Bergen County Hospital, Bergen Pines.

Editor Appointed.—At a meeting of the board of trustees, Newark, October 1, Dr. Henry O. Reik, a former president of the American Institute of Medicine and editor of the *International Medical and Surgical Survey*, was appointed editor of the *Journal of the Medical Society of New Jersey* to succeed the late Dr. David C. English.

Personal.—Dr. Frank J. McLoughlin has been appointed medical director of the St. Francis Hospital, Jersey City, to succeed the late Dr. John J. Mooney. Dr. McLoughlin also will continue as visiting physician to St. Mary's Hospital,

Hoboken.——Dr. John Bennett Morrison, Newark, secretary of the Medical Society of New Jersey, addressed a recent meeting of the New Jersey Press Association, New Brunswick.

Sale of Ethyl Gas Suspended.—Pending the outcome of an investigation by the state department of health of the recent deaths of employees engaged in the manufacture of tetra-ethyl lead, Dr. Henry B. Costill, director of the state department of health, has requested the Standard Oil Company to suspend the sale of ethyl gas in New Jersey. The Ethyl Gas Corporation, New York, distributors of the gas in this country, have also been requested to stop shipment into New Jersey, it is reported.

Epileptics Immunized Against Scarlet Fever.—The first large experiment of the Dick test in this state was made at the state village for epileptics at Skillman, November 2, it is reported. Dr. Abraham Zingher, of the New York City Health Department, performed the test on 800 inmates of this state institution. The state commissioner of institutions and agencies, Burdette J. Lewis, Dr. David F. Weeks, superintendent of the village, Mr. David C. Bowen, of the state board of health, were among those present.

NEW YORK

Smallpox in Johnson City.—There were 113 cases of smallpox in that city, November 12, nineteen new cases having been reported, November 11.

Funds for Research.—The Borden Company has given $15,000 to Columbia University for research in food chemistry and nutrition, and an anonymous donor has given $6,000 for a laboratory of surgical research.

City Takes over Clinic.—The prenatal clinic, started and maintained by the Division of Maternity, Infancy and Child Hygiene in Oswego, has been turned over to local direction. Dr. Arthur W. Irwin is physician in charge.

Another Death from Virulent Smallpox.—Three weeks ago THE JOURNAL noted the first death in New York State from virulent smallpox in the last three years. Another death from virulent smallpox has been reported from Rochester. The victim was a temporary school teacher.

State Society Appoints Executive Officer.—Dr. Joseph S. Lawrence, director of the Division of Venereal Diseases since its organization in 1918, has resigned to become executive officer of the New York State Medical Society and was succeeded by Dr. Albert Pfeiffer, chief of the venereal disease bureau, Massachusetts State Health Department, November 1.

Millions for Rochester University.—At the opening of a campaign to raise $10,000,000 for the greater University of Rochester, November 14, it was announced that George Eastman had donated $2,500,000, and the General Education Board of the Rockefeller Foundation $1,000,000. This assures establishing the new school of medicine, which admits its first class next September, on a level with other first class medical schools.

Joint Meeting to Prevent Smallpox.—There was a joint meeting of the Cortland County Medical Society, the Cortland Board of Health and the Cortland Board of Education at the high school, Cortland, November 3, at which the mayor presided, to consider means of preventing the entrance of smallpox in that community. There was then no smallpox in Cortland, but there were many cases in Johnson City, not far away.

State to Establish Psychiatric Center.—Announcement was made, November 14, that New York will have a great new center of research on mental disease. An agreement has been signed by the State Hospital Commission and the Administrative Board of Columbia University and the Presbyterian Hospital, under the terms of which the new institute will be built at One Hundred and Sixty-Fifth Street and Broadway, and will become a part of the great medical center which Columbia University and the Presbyterian Hospital are creating. The direct object will be the investigation of mental diseases and the training of physicians to treat mental disorders. There will be from 150 to 200 beds for patients under observation. The State Hospital Commission plans to expend at least $1,500,000 on the new hospital which sum is already available under the $50,000,000 bond issue approved at the polls. Columbia University and the Presbyterian Hospital own twenty acres of land extending from One Hundred and Sixty-Fifth to One Hundred and Sixty-Eighth streets and from Broadway to the Hudson River which will afford a site for the new psychiatric institution.

Personal.—Dr. William C. Jensen, chief of the medical service of the National Sanatorium, Johnson City, Tenn., has been appointed a member of the staff of the Cattaraugus County health demonstration as assistant director of the bureau of tuberculosis, and will also be the resident physician at Rocky Crest Sanatorium. Dr. Jensen was formerly assistant director of the tuberculosis division of the National Military Home, Dayton, Ohio.——Fred R. Griffith, Ph.D., has been promoted to associate professor of physiology and Dr. E. C. Albritton appointed associate in physiology at the University of Buffalo.——Dr. John P. Ruppe, formerly assistant superintendent of the Nassau County Sanatorium, has been appointed superintendent of the Columbia County Tuberculosis Sanatorium.——Dr. Willard T. Rivenburgh, for many years health officer of the village of Middleburg and the towns of Fulton and Blenheim, Schoharie County, and custodian of the district state laboratory supply station, has resigned these positions to become assistant state medical inspector of schools in the state department of education.——Dr. Nathaniel W. Faxon, director Strong Memorial Hospital, Rochester, was elected third vice president of the American Hospital Association at the recent annual meeting in Buffalo.

Mental Clinic for Elmira.—At a meeting of the Chemung County Medical Society, October 30, plans were outlined by representatives of the Binghamton State Hospital for a branch mental hygiene clinic at Elmira. Dr. Naman H. Soble, president of the society and largely responsible for obtaining the clinic, presided. Dr. William C. Garvin, medical superintendent of the Binghamton State Hospital, said that while state institutions for the insane are crowded, many inmates would improve in their own homes under the care of a competent physician, and it is the purpose to return such patients to their communities and give them the same help at the clinic that they receive at the state hospital. Social workers will be appointed to look after their welfare, and, in many cases, the patient will be given employment so he may earn a living for himself and dependents. Mental patients, whose conditions would not warrant admission to a state institution, will be treated at the clinic; other persons will voluntarily visit the clinic for treatment. Dr. Philip Smith, head of the department of medical inspection of the state hospital commission, commended the Elmira physicians for their cooperation in bringing the clinic to that city. There are at present sixty branch station clinics in the state. A resolution was unanimously passed by the medical society favoring the clinic and pledging support.

New York City

Hiccup Epidemic.—An epidemic of thirty-six cases of hiccuping has been reported in sections of the borough of Queens. Some cases have required hospital treatment. A few cases have been reported from Manhattan and Brooklyn.

Dr. James Elected Trustee of Columbia.—Nicholas Murray Butler, president of Columbia University, has announced the election of Dr. Walter B. James, New York, as life trustee of Columbia University to succeed Judge Robert S. Lovett, who resigned because of ill health. Dr. James, who has served three years as alumni trustee, graduated from Yale, 1879, and received his M.D. from Columbia, 1883.

Institute for the Blind.—The New York Institute for the Education of the Blind, which for ninety-one years occupied the site at Ninth Avenue and Thirty-Fourth Street, opened new quarters, November 3, in Pelham Parkway at Williamsbridge Road. The new site comprises 16 acres. Pupils are received at this school from New York and the five counties adjacent and from northern New Jersey.

Harvey Lectures.—Dr. Thorvald Madsen, director of the state serum institute, Copenhagen, Denmark, delivered the fourth Harvey Society lecture at the New York Academy of Medicine, November 22. His subject was "Temperature and Immuno-Chemical Reactions." The fifth Harvey lecture will be delivered by Dr. William Einthoven, professor of physiology, University of Leyden, Netherlands, at the New York Academy of Medicine, December 6. His subject will be "The Relationship of Mechanical and Electrical Phenomena of Muscular Contraction with Special Reference to the Cardiac Muscle."

Examination of School Children.—As a part of the annual health day program, nearly 1,000,000 school children in the city schools were examined, November 6. Every teacher in the city suspended academic work on that day until they had examined all their pupils for apparent physical defects. They referred all cases presumed to require medical attention to medical inspectors of the department of health to complete the examination, after which regular follow-up work will

begin. In the meantime parents are to be informed by school principals of defects found, and advised to have them corrected. The health program in the city schools is under the supervision of the Bureau of Educational Hygiene of the Department of Education, of which Dr. Albert K. Aldinger is director.

Society News.—Dr. William H. Park, director bureau of laboratories, city health department, delivered a public lecture at the New York Academy of Medicine, November 12, on "Development of Modern Medicine in Measles and Scarlet Fever" under the auspices of the public health education committee, Medical Society of the County of New York, in cooperation with the Academy of Medicine.——At the joint meeting of the New York Neurological Society and the section of neurology and psychiatry of the New York Academy of Medicine, November 11, Drs. Charles L. Brown, Boston, and Douglas Symmers, Bronxville, spoke on "Acute Serous Encephalitis." The section of pediatrics of the New York Academy of Medicine met jointly, November 13, with the New York Home Economics Association and the New York Nutrition Council, the latter supplying the program. The discussion was opened by Graham Lusk, Ph.D.——At the recent meeting of the executive committee of the Eastern Medical Society the committee was empowered to proceed with plans for obtaining property to house the society.—— The New York Roentgen Society is devoting its attention this year to a study of the skull at the meetings in the New York Academy of Medicine the second Monday of each month. All physicians interested, particularly those engaged in eye, ear, nose and throat work are cordially invited. At the meeting, December 8, Dr. J. Parsons Schaeffer, professor of anatomy, Jefferson Medical College of Philadelphia, will discuss "Important Phases in the Anatomy and Development of the Nasal Accessory Sinuses."——Dr. Otto Warburg of the Kaiser Wilhelm Institute for Biology, Berlin, recently lectured before the scientific staff of the Rockefeller Institute for Medical Research on "Metabolism of Carcinoma Cells," and "Iron as an Oxygen Carrier of the Respiration Ferment." The lectures were followed by laboratory demonstrations of Dr. Warburg's methods of studying tissue respiration.

OHIO

Society News.—Judge Ernest Thompson addressed the Logan County Medical Society at Bellefontaine, November 7, on "The Relation of the Medical Profession to the Juvenile Court."——Dr. John B. Deaver, Philadelphia, addressed the Marion County Medical Society at Marion, November 4, on "Abdominal Dyspepsia."

Ohio Public Health Association.—Beginning September 1, this association took over the executive work of the Ohio Society for Crippled Children, which is now in charge of Robert G. Paterson, the secretary. Mr. D. M. Auch, for several years with the Associated Press at Columbus, has been added to the staff of the association and assigned to the work of the Crippled Children's Society. The Ohio Public Health Association is now also handling the executive work of the Ohio Hospital Association.

Institute for the Study of Tuberculosis.—The Academy of Medicine of Toledo and Lucas County, in cooperation with a number of allied organizations, will hold an institute for the study of tuberculosis at the Academy Building and at the Lucas County Tuberculosis Hospital, Toledo, December 2-4. Among others, Henry F. Vaughan, D.P.H., commissioner of health, Detroit, will speak on "What Constitutes a Well-Rounded Tuberculosis Program"; Dr. John E. Monger, director of health of Ohio, "The State's Interest in Tuberculosis"; Dr. Preston M. Hickey, professor of roentgenology, University of Michigan Medical School, Ann Arbor, "The Diagnostic Value of Roentgen Ray in Tuberculosis"; and Dr. Henry J. Gerstenberger, department of pediatrics, Western Reserve University School of Medicine, Cleveland, "Prognosis, Treatment and Prevention."

PENNSYLVANIA

Scarlet Fever.—In his weekly report, the health officer of Erie announced that there were twenty-three new cases of scarlet fever in that city, and that the number was increasing daily.

Monument to Washington's Physician.—A monument was recently dedicated with appropriate services in the State Hill Cemetery, near Lancaster, to Dr. Zenas Macomber of York County, who was the body guard of George Washington for two years. Dr. Macomber, who engaged in five battles of the Revolutionary War and was at Paoli the night of the massacre, was wounded many times.

Society News.—Dr. George P. Müller, Philadelphia, associate professor of surgery, University of Pennsylvania School of Medicine, addressed the Dauphin County Medical Society, Harrisburg, November 4, on "The Surgical Treatment of Angina Pectoris."——At the nineteenth annual conference of the secretaries of the component county medical societies of the Medical Society of the State of Pennsylvania, Dr. William Allen Pusey, Chicago, President of the American Medical Association gave an address.——Dr. Abraham Zingher, New York, addressed the Allegheny County Medical Society, November 20, on "Preventive Treatment of Diphtheria and Scarlet Fever, Including the Schick and Dick Tests."

What the Undertakers Want.—The committee on morticians, Medical Society of the State of Pennsylvania, of which Dr. Frank C. Hammond, Philadelphia, is chairman, is endeavoring to increase the percentage of necropsies in hospitals by cooperative measures between morticians and physicians. It ascertained the number of necropsies performed, the methods used in securing permission and the attitude of undertakers in various communities, and then requested the presidents of county medical societies to induce qualified speakers to address meetings of undertakers about the necessity of necropsies and the advantages of cooperation. The speaker selected in each instance was informed of the attitude of the undertakers in his district and given an outline suggesting the course of his talk. At one meeting, it developed that if the pathologist would invite the undertaker to be present, and then perform the necropsy in a manner satisfactory to him, there would be no lack of cooperation. The majority of undertakers, however, desired, that, among others, the following procedures be carried out:

1. Use no bandages whatever on face or hands.
2. The undertaker must be informed immediately of every death occurring in the hospital and also as to the time of the necropsy in case one is to be performed.
3. The necropsy should be performed at the earliest possible moment after death.
4. The undertaker must be informed if the subject had cancer or contagious disease, and especially so if there was syphilis.
5. If single organs are removed their vessels must be ligated.
6. If the heart is removed, the aorta and the ascending and descending venae cavae must be ligated.
7. If the heart and abdominal organs are removed the aorta must be ligated, not only at the cardiac end, but also at the lower end, or the two common iliacs ligated.
8. If the brain is removed, the foramen magnum must be dried, cotton forced down into the spine and the foramen filled with plaster of Paris. The plaster must be given time to "set" before the calvarium is replaced.
9. The body must be sewed up, preferably with a mattress stitch, so that the incision is watertight.
10. The body must be thoroughly cleansed before turning it over to the undertaker.

Philadelphia

Renew Pneumonia Drive.—The Pneumonia Commission, appointed in 1916 by the director of the department of public health, to devise means of reducing the mortality from pneumonia, has been reorganized and subcommittees have been appointed to carry on a public campaign among laymen and physicians.

Dentists Admitted to Medical Society.—At a meeting of the Pennsylvania Association of Dental Surgeons, in this city, November 11, it was announced that hereafter dentists will be admitted as associate members of the Philadelphia County Medical Society. The first joint meeting of physicians and dentists will be at the College of Physicians, December 12.

University News.—Appointments to the staff of the University of Pennsylvania School of Medicine have been made as follows: Dr. George Fetterolf, professor of otolaryngology, succeeding Dr. Burton A. Randall, retired; Dr. John Claxton Gittings, professor of pediatrics succeeding Dr. John P. Crozer Griffith, retired, and Dr. William C. Stadie, assistant professor of research medicine.

TENNESSEE

Dr. Wise Resigns.—Dr. Edward B. Wise, city physician and chief executive, health department of Chattanooga, has resigned. The Chattanooga (Tenn.) *Herald* remarks that Dr. Wise has looked after the health of this city for more than forty years and has been as faithful to his trust under the most adverse conditions as it is possible for man to be.

Personal.—Dr. William D. Haggard, Nashville, President-Elect of the American Medical Association, addressed a combined meeting of the Kentucky State Medical Association and the Louisville Rotary Club, September 25.——Dr. G. Canby Robinson, dean-elect of the Vanderbilt University

Medical Department, Nashville, was reelected vice president of the American Occupational Therapy Association at its eighth annual meeting, Buffalo, October 7.

Clinical Pathological Conference.—The University of Tennessee College of Medicine, Memphis, holds a monthly clinical pathologic conference at 8 p. m., each second and fourth Wednesday during the academic year, in the pathologic institute. Physicians of Memphis are invited and urged to participate in the discussions. Cases are presented which have been studied in the wards of the Memphis General Hospital or in the outpatient department, and which have been operated on or have come to necropsy. When the clinicians finish, the pathologists demonstrate specimens concerned with the case, following which the clinicians and pathologists correlate their findings. Admissions to the Memphis General Hospital last year totaled 5,412 patients, of whom 95 per cent. were charity patients available for study. The staff of the pathologic institute is doing everything possible to make physicians comfortable and arouse their interest at these conferences. At the November 26 conference the subject will be "Diphtheria and Its Sequelae," and December 10, "Arteriosclerosis and Its Effect on Kidneys, Heart and Brain."

TEXAS

Physician Acquitted.—Dr. Fred O. Taylor, Winfield, was acquitted by a jury in federal court at Texarkana, November 8, on an indictment charging violation of the Harrison Narcotic Law, it is reported. The trial lasted three days.

Personal.—Dr. L. H. Martin, recently of the Covington County Health Unit, Alabama, has been appointed director of the bureau of rural sanitation and county health work, state board of health, to succeed Dr. Aleck P. Harrison, Austin, resigned.——Mr. J. B. Franklin, Dallas, has resigned as superintendent of Baylor Hospital, effective December 31.

Association of Sanitarians.—The Texas Association of Sanitarians held its second short school of instruction for health workers at Houston, November 5-8. The short school is for the instruction of lay people particularly, i. e., sanitary inspectors. About 250 were present. The roll was called twice daily and certificates of attendance will be issued. There was no charge for tuition. Dr. Arthur H. Flickwir, city health officer of Houston, was reelected president of the association and director of the next school.

UTAH

Fewer Chiropractors.—Of the sixty chiropractors registered in Utah last year, ten have moved away and ten are no longer practicing, according to reports in the registration department.

WASHINGTON

Infantile Paralysis Situation Improved.—According to Dr. Paul A. Turner, director of the state department of health, the infantile paralysis epidemic of the last two months is practically ended throughout the state. The number of deaths up to October 1 was thirty-eight, while in the epidemic of 1921 there were 126. Although there were 225 new cases in September, about 80 per cent. of the cases recovering have no sign of paralysis. Dr. Turner pointed out, it is reported, that there is an orthopedic hospital in Seattle equipped to care for patients who are paralyzed.

WISCONSIN

Section on Radiology.—The organization of the section on radiology of the State Medical Society of Wisconsin was perfected at Milwaukee, October 29, in connection with the tri-state meeting. Dr. Manly J. Sandborn, Appleton, was chosen chairman and Dr. Clarence W. Geyer, 221 Grand Avenue, Milwaukee, secretary-treasurer.

Personal.—Dr. Robin C. Buerki, Madison, business manager of the new Wisconsin General Hospital, has announced the appointment of Drs. Jerome R. Head, Robert E. Burns and Volney B. Hyslop as resident physicians at the hospital. ——Dr. Benjamin H. Hager has been appointed associate professor of surgery at the Wisconsin General Hospital.—— Dr. Urban A. Schlueter, Milwaukee, was elected president of the Milwaukee Physicians' Association, October 9, Dr. John S. Stefanez, vice president, and Dr. Arthur C. Nugent, secretary-treasurer.——Dr. Francis E. Turgasen has accepted a teaching position in the medical school, University of Illinois College of Medicine, Chicago, and will resign his present position on the Marshfield Clinic staff, about December 1.

Society News.—Dr. Russell D. Carman, Rochester, Minn., addressed the Rock County Medical Society, September 30, Janesville, on "Roentgen Ray Diagnosis of Gallbladder Diseases."——Dr. Hugh T. Patrick, Chicago, addressed the Sheboygan County Medical Society, October 9, on "The Differential Diagnosis of Organic and Functional Disease of the Nervous System."——The Central Wisconsin Ophthalmic and Otolaryngologic Clinic was organized at Marshfield, October 16, electing Dr. William Hipke, Marshfield, president, Dr. Arthur L. Payne, Eau Claire, vice president, and Dr. William G. Merrill, Wisconsin Rapids, secretary-treasurer. The district takes in cities as far north as Ashland and as far south as Fond du Lac. Meetings will be held bi-annually in May and October.

GENERAL

Hospital News.—The corresponding secretary of the Board of Hospitals and Homes, Methodist Church, announces the dedication of the following hospitals: Richland Hospital, Richland Center, Wis., twenty-five beds, November 26; Wesley Hospital, Wadena, Minn., fifty beds, November 30; Methodist Hospital, Pikeville, Ky., fifty-six beds, December 6.—— Work has started on a new hospital building at Wesley Hospital, Marshfield, Ore.

Physicians in Indian Service Cannot Practice.—The commissioner of Indian affairs has ruled that all physicians who are receiving the full salary of their allocations under reclassification will be required to give their full time to Indian service duties, and will not be permitted to engage in private practice except where no other physician is available and in cases of emergency. This circular does not apply to contract physicians where compensation is less than $1,860 a year.

Plague the World Over.—In the October *Epidemiological Report of the League of Nations*, there is a summary of the latest reports from localities in which one or more cases of plague had recently been recorded. In the table for Africa, there are eleven localities listed in which the deaths from plague varied from 377 to zero. Under Europe, there are twelve localities listed, the greatest number of cases in any one having been eight. In Asia, there are fourteen localities listed, the number of deaths varying from 1,668 in Java to zero in several places. Under America, Brazil, Ecuador and Peru are listed and the total number of deaths in them was seven.

Foreign Guests at Hospital Association Meeting.—At the annual conference of the American Hospital Association, Buffalo, October 6-10, the following foreign guests were present: Dr. James S. Elliott, honorary surgeon, Wellington Hospital, Wellington, New Zealand; Dr. Alec R. Falconer, medical superintendent, Dunedin Hospital, and Mr. W. S. Downs, business manager, board of trustees Olago Hospital, Dunedin, New Zealand; Dr. Percy Watson, Foochow Hospital, Foochow, China, and Dr. T. D. Sloan, Peking Union Medical School Hospital, Peking, China, and Mr. J. Courtenay Buchanan, honorary secretary British Hospitals Association, London, England.

Research in Colorimetry.—The Munsell Research Laboratory has established two positions of research assistant in colorimetry, at the National Bureau of Standards, Washington, D. C., in order to provide for training suitably qualified men in colorimetric measurement. These assistants will work under the direction of Irvin G. Priest and K. S. Gibson. Applicants must be between 19 and 25 years of age and have (1) a bona fide desire to specialize in this for a life work, (2) a bachelor's degree, or equivalent, including physics, (3) normal vision or refractive errors which are readily corrected and (4) normal color sense. The salaries will be between $1,600 and $2,500 per year, and the appointments are for one year. Applications may be addressed to the Munsell Research Laboratory, 10 East Franklin Street, Baltimore.

Prize for Contribution to Science.—The prize of the American Association for the Advancement of Science, which was inaugurated at the seventy-fifth anniversary of the society, last year at Cincinnati, will be awarded in a similar manner at the Washington meeting, this year. The prize of $1,000, which will be awarded to the author of a noteworthy contribution to science, is not competitive. There will be no formal entry of papers. Only papers that appear on the program of the Washington meeting will be considered, including the programs of all scientific societies meeting with the American Association for the Advancement of Science. Thus, the chosen contribution need not be by a member of the association. Through the generosity of a member, the

American Association for the Advancement of Science has made arrangements by which five such annual prizes are provided for in addition to the prize award of last year.

American Stomatological Association.—At a meeting of the American Stomatological Association, New York, October 9, Dr. Homer E. Smith, New York, was elected president; Drs. Oliver T. Osborne, New Haven, Conn., and Noah Philip Norman, New York, vice presidents; Dr. Robert H. Rose, New York, treasurer, and Alfred Asgis, D.D.S., New York, secretary. In conformity with the International Stomatological Association, the American Stomatological Association adopted the following principles at this meeting:

1. Stomatology signifies that branch of medical science which has for its purpose the study and treatment of diseases of the mouth.

2. Stomatology deals with all problems concerning the normal and abnormal conditions of the mouth and its adnexa, and with the surgical and medicinal treatment of oral disease.

3. Stomatology, so defined, is the only correct designation of the specialty of medicine devoted to the care of the mouth and teeth, including dental prosthesis.

4. Stomatology embraces odontology (dentistry), or the study of the normal and pathological conditions of the dental apparatus, which is an integral part of the oral cavity. Odontology or dentistry is inseparable from stomatology.

American Public Health Association Meeting.—The Dick test for the diagnosis of susceptibility to scarlet fever and the immunization of nonimmunes by streptococcus toxin was the outstanding feature from the scientific standpoint at the Detroit meeting of the association, says the *American Journal of Public Health*. The total attendance at this meeting was about 900. The president, Dr. William H. Park, New York, was unable to attend on account of illness. Dr. Thorvald H. Madsen, director of the serum institute of Denmark and recently appointed chairman of the health section of the League of Nations, was elected an honorary fellow of the association. At a meeting of public health workers not directly connected with the association meeting, it was decided to establish a medal in honor of Prof. William T. Sedgwick, a former president of the American Public Health Association, and a committee was appointed to develop the project. The association admitted to affiliation the Virginia Public Health Association and the Massachusetts Association of Boards of Health. The next meeting will be in St. Louis in 1925.

Far Western Child Health Demonstration.—From more than thirty applications of cities and counties, the Child Health Demonstration Committee has selected Marion County, Ore., for the far western demonstration. The selection of Marion County assures the cooperation of local leaders in health and education. It has a population of 55,000, 90 per cent. of which is American born. It is essentially rural, Salem, the county seat and state capital having only 25,000 people. The Salem School Board has offered a completely equipped house for demonstration headquarters, and civic clubs have assured its maintenance. Citizens have pledged to establish a county health unit. Child health demonstrations of the Commonwealth Fund are now under way in Fargo, N. D., Athens, Ga., and Rutherford County, Tenn. Organization in Marion County will begin early in 1925. This entire program is under the Child Health Demonstration Committee, representing the American Child Health Association and the Commonwealth Fund. The director is Courtney Dinwiddie, general executive of the association; the chairman of the committee, Barry C. Smith, director of the Commonwealth Fund. The object is to develop a sound community health program.

American Board of Otolaryngology.—At an organization meeting, Chicago, November 10, at the invitation of Dr. George E. Shambaugh, the organization of the board of directors of the American Board of Otolaryngology was effected as follows: Drs. Harris P. Mosher, Boston, president; Frank R. Spencer, Boulder, Colo., vice president; Hanan W. Loeb, St. Louis, secretary-treasurer; Thomas E. Carmody, Denver (absent); Joseph C. Beck, Chicago; Thomas H. Halsted, Syracuse, N. Y.; Robert C. Lynch, New Orleans; Burt R. Shurly, Detroit; Ross H. Skillern, Philadelphia; William P. Wherry, Omaha. The board comprises representatives of the five national otolaryngologic associations: the American Otological Society, the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, the American Academy of Ophthalmology and Otolaryngology and the Section of Laryngology, Otology and Rhinology of the American Medical Association. The object of the association is to elevate the standard of otolaryngology, to familiarize the public with its aims and ideals, to protect the public against unqualified practitioners, to receive applications for examination in otolaryngology, to conduct examinations of such applicants, to issue certificates of qualification in otolaryngology and to perform such duties as will advance the cause of otolaryngology. The first examination will be held at the time of the meeting of the American Medical Association.

Society News.—At the annual meeting of the Radiologic Society of North America, Kansas City, Mo., December 8-12, among others, Dr. Hermann Wintz, Erlangen, Germany, will discuss "Factors Influencing the Roentgen Ray Therapy of Carcinoma"; Dr. Emil G. Beck, Chicago, "Interesting Phases in the Treatment of Apparently Hopeless Cases of Sarcoma and Carcinoma"; Dr. Francis C. Wood, New York, "Studies in Dosimetry"; Dr. William C. MacCarty, Rochester, Minn., "Pathologic Types of Bone Tumors." There will be a joint meeting with the Jackson County Medical Society, Tuesday evening, December 9, the subject being "A Demonstration of Tuberculosis of the Lungs," illustrated by a three-reel film, by Dr. Lewis G. Cole, New York.——At the annual meeting of the Inter-State Post-Graduate Assembly of America, Milwaukee, October 27-31, Dr. Addison C. Page, Des Moines, Iowa, was installed as president and the following officers elected: president-elect, Dr. John Van Reed Lyman, Eau Claire, Wis.; vice presidents, Drs. Joseph S. Evans, Madison, Wis., Edwin P. Sloan, Bloomington, Ill., Frank M. Muller, Keokuk, Iowa, W. A. Jones, Minneapolis, Minn., Ralph A. Kinsella, St. Louis, and Willis D. Gatch, Indianapolis; managing director, Dr. William B. Peck, Freeport, Ill.; treasurer, Dr. J. Sheldon Clark, Freeport, Ill.; secretary and director of exhibits, Dr. Edwin Henes, Jr., Milwaukee.——At the recent annual meeting of the American Dental Association, Dallas, Texas, Dr. Charles N. Johnson, Chicago, was installed as president and the following officers elected: president-elect, Dr. Sheppard W. Foster, Atlanta, Ga.; vice presidents, Drs. Athol L. Frew, Dallas, Texas, John C. Hildebrand, Waterloo, Iowa, Guy S. Millberry, San Francisco; treasurer, Dr. Arthur R. Melendy, Knoxville, Tenn.; general secretary, Dr. Otto U. King, Chicago. The next meeting will be in Louisville, Ky.——At the meeting of the American College of Radiology and Physiotherapy, Chicago, November 12-14, Dr. John S. Coulter, Chicago, was chosen president-elect; Drs. Harry E. Steward, New Haven, Conn., Walter Scott Keyting, Salt Lake City, W. B. Chapman, Joplin, Mo., Disraeli W. Kobak, Chicago, vice presidents; Dr. Roy W. Fouts, Omaha, secretary, and Dr. Edwin C. Henry, Omaha, treasurer. The next meeting will be in Chicago, November, 1925.

LATIN AMERICA

Yucatan Medical Society.—At the recent election, Dr. R. Sauri was elected honorary president, and Dr. A. Berrón Guerrero, president. The other officers elected were Drs. J. E. Contreras, vice president; E. Palomo, secretary; A. González, assistant secretary; G. Madera, treasurer; librarian, N. Souza Novelo, and as editors of the *Revista Médica de Yucatan*, Drs. E. Farfán López and Ramón Carranca.

Tribute to Finlay.—The *Eco Científico* of Havana reproduces the letter from the president of the republic of Panama to the secretary of state of Cuba informing the latter that the new laboratory of the Santo Tomás Hospital at Panama is to be called the Carlos J. Finlay Laboratory. The letter says that this is a tribute to the "eminent Cuban physician to whose persevering investigations is due the discovery of the mode of transmission of the causal agent of yellow fever."

FOREIGN

The Hamilton-Maynard Prizes.—Dr. A. Pyper, Pretoria, and Dr. Schneider of Potchefstroom, South Africa, were awarded the Hamilton-Maynard prizes, September 6, by the directors of the *Medical Journal of South Africa*.

Nobel Prize to Einthoven.—It is officially announced from Stockholm that the prize in physiology and medicine is to be awarded to W. Einthoven, professor of physiology at the University of Leyden, inventor of the string galvanometer, which has facilitated electrocardiography. He was born in 1860, and is visiting the United States at present.

Minister of Health Sues Cancer Institute.—Justin Godart, minister of labor and health, France, has instituted legal proceedings against a medical institute of Paris which professes to cure cancer without surgery, it is reported. The object of the suit, if court action fails, is to obtain new legislation for the protection of cancer victims. After observing surgical and roentgen-ray demonstrations at the recent international congress at Strasbourg, Minister Godart was convinced, it is reported, that he had no right to allow cancer

patients in France to be encouraged that a cure was possible by medical treatment alone.

Government Subsidy to Encourage Research.—The subsidy paid by the Japanese government to encourage scientific research amounts to a total of 135,000 yen for the present fiscal year. It has been awarded to about eighty research workers in fifteen medical colleges, seven special schools of medicine, pharmacology and dentistry and three institutes. Among those receiving awards and their subjects are, Dr. Takagi, "Prophylaxis of Typhoid Fever and Dysentery with Special Reference to Food and Drink"; Dr. Matsuo, "Functions of the Liver"; Professor Awoki, "The Immunologic Classification of Bacilli"; Professor Ishihara, "Function of the System of Stimulative Conduction of the Heart"; Professor Fukushi, "Studies on Thyroid Gland"; Professor Okada, "Studies on the Basal Metabolism and Nourishment"; Professor Manabe, "Studies on Caisson Disease."

Method of Medical School Examinations Changed.—At a staff meeting of the medical department of Tokyo Imperial University, it was decided to adopt a new method of examining papers for the degree of doctor of medicine, and the following points were agreed to: (1) A paper is to be examined by three professors; (2) examiners should first present their opinions on the value of the paper to the committee; (3) the abstracts of the paper made by the examiner are to be distributed among the professors and the assistant professors previous to the date of the staff meeting; (4) the chief examiner has to explain the abstracts of papers to members at a staff meeting. The *Japan Medical World* says that under the present arrangement too many persons are believed to have been given the degree of doctor of medicine, and it is generally desired that other universities in Japan adopt a similar plan of examination and thus restrict the awarding of so many degrees.

Personal.—Dr. José Arce, rector of the University of Buenos Aires, was invested with an honorary degree by the University of Madrid, on his recent visit to Spain with the delegation from Argentina to attend the Spanish Medical Congress at Seville. Over 300 Argentine physicians were inscribed as members of the congress. Dr. Arce addressed the medical faculty at Madrid on "Operative Methods in Argentina," with motion pictures; Dr. Houssay spoke on "The Innervation for Secretion of Epinephrin," and Dr. Belou on "The Anatomy of the Biliary Tract from a Surgical Standpoint."——Dr. Lorenzutti has been appointed director of the new antirabies institute recently organized at Trieste, similar to those in Padua, Bologna, Rome and elsewhere. It is housed in the Maddalena Hospital.——A portrait bust and album were presented recently to Prof. C. Agostini, director of the Perugia asylum, on the occasion of the centennial of the institution. The new addition to the asylum has been named for him.——At the recent elections in Italy, four physicians were elected to the senate, Profs. G. Cirincione, Siena; D. Giordano, Venice; L. Simonetta, Florence, and Dr. G. Guelpa. The latter resided in Paris for fifty years and is known for his acid-generating treatment of gout.——Dr. A. Zawadski, Warsaw, was the leader of a large party of Polish professors and other physicians and surgeons who attended the French medical and surgical meetings at Paris in October. They were fêted in medical centers as they made the tour of France.——Dr. Myra Carcupino Ferrari presided at the recent annual meeting at Milan of the Association of Italian Medical Women.——Dr. Balbino do Rego was the victim of cruel persecution in 1906 in the Madeira Islands, as the populace held him responsible for the epidemic of plague, as he was director of the bacteriologic institute at the time, and was driven away from the country. The *Medicina Contemporanea* now relates that he recently returned to Funchal and was greeted with an affectionate welcome.——Prof. J. A. Presno, Havana, president of the Association franco-cubaine, was tendered a reception by the Paris headquarters of the association at which he announced that plans had been made for the foundation of a home for Cuban students in Paris. It is to form part of the new cité universitaire.——Prof. A. Monti, Pavia, is at the head of the committee in charge of the Brioschi Foundation for study of endemic goiter, recently founded at the Italian Institute for Hygiene and Social Assistance, Via Minghetti 17, Rome.

Deaths in Other Countries

Dr. **Karl Hedbom,** Upsala, noted for his research on myxomycetes, aged 65.——Dr. **Augusto Molina Solis,** Merida, Yucatan, emeritus professor of surgery in the medical faculty, of which he was long director; deputy to the national congress.

Government Services

Revised Regulations for Reserve Officers

Regulations for reserve officers of the army have been revised by the general staff of the army in matters of appointment, training and promotion, and will be issued within a few weeks. An auxiliary section of the corps has been created whereby reserve officers who otherwise would be retired for age or disability may be retained in service. The War Department is now determining the officer qualifications for all grades and branches in the military service. Under the revised regulations, a reserve officer who has passed the required examination and completed the necessary work will be given a certificate of capacity for promotion, but will not be promoted until an actual vacancy exists for him in the army of the United States. Heretofore a reserve officer was required to serve a specified time in each grade. The new regulations retain this principle, but the time to be served is varied for each grade in accordance with a scientific system of promotion, which will operate to produce the proper proportion of officers in all grades.

Another feature of the revised promotion regulations is that World War officers of mature age need not serve the full specified time in a grade. For example, a major, aged 45, will not be called on to serve three years as a major, if he is able to complete the work required and pass the examination for certificate of capacity to be a lieutenant colonel. He will be promoted as soon as he secures this certificate, provided a vacancy exists. Special procedure is provided for the appointment of reserve officers as brigadier generals and major generals. Under the new regulations reserve officers will be appointed brigadier generals after passing a military examination, the scope of which will be announced several months in advance.

In developing plans for mobilization in time of war and other emergencies the Surgeon General is giving particular attention to the organization of hospitals. Advantage is being taken of resources already existing in organized civil hospital staffs so that there will be little, if any, disruption in time of war of those professional associations by which men learn so well one another's methods and aptitudes. It is the plan in arranging personnel for hospital units to preserve as far as practicable associations existing in the faculties of qualified schools and hospitals, and to organize the entire quota of surgical, evacuation and general hospitals at civil institutions, which for the present will include only persons who will become commissioned officers. Each of these staffs is to consist of a body of reserve officers who can be prepared to branch off as a nucleus of a military hospital in case of war.

Meeting of Medical Council of Veterans' Bureau

The second conference of the Medical Council of the Veterans' Bureau, Washington, November 10-11, was attended by thirty specialists. Dr. Ray L. Wilbur, president, Stanford University, Calif., and former President of the American Medical Association, is chairman of the council; Dr. Henry Kennon Dunham, Cincinnati, vice chairman; Dr. Malcolm T. MacEachern, Chicago, secretary; Dr. Roy D. Adams, Washington, secretary of the executive committee. The Veterans' Bureau operates now forty hospitals, ninety dispensaries, ninety-four clinical laboratories and one hundred roentgen-ray laboratories; more than 25,000 patients are being cared for in hospitals. The director reported to the conference that 3,000 additional veterans have come under the hospital care of the bureau as a result of the World War Veterans Act passed by the last Congress, which permits all veterans to enter government hospitals whether or not their disabilities resulted directly from service. The conference discussed the necessity for a permanent organization of physicians in the Veterans' Bureau, pointing out that the present system is inefficient and that many physicians are serving at a financial sacrifice. The council recommended that immediate steps be taken to secure legislation to establish a medical corps in the bureau with higher pay for medical personnel. It was the opinion of the council that unless the bureau offers a permanent career it would be impossible to obtain the high type of physicians necessary. An independent medical board, working with government personnel, was recommended by Dr. Harry A. Pattison to make a complete survey for the diagnosis of tuberculosis and neuropsychiatric cases in order to segregate in appropriate hospitals the two types of disease.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 7, 1924.

The Hadwen Case

In my last letter I gave a full outline of the trial and acquittal of Dr. Hadwen on the charge of manslaughter. The great public interest in the case continues, as is shown by the extensive commentary in both the medical and the lay press. For the reason that every physician should know the circumstances under which he is liable to be indicted for manslaughter when a patient dies under his hands, the *Lancet* has issued a special supplement of sixty-five pages (about equal to one of its ordinary issues) giving a verbatim account of the trial. In an editorial it points out that Dr. Hadwen was acquitted because, holding the views that he did, his conduct did not amount (in the words of the judge) to "wicked negligence." The jury was not asked to decide whether the child died of diphtheria or not or whether Dr. Hadwen's views were right or not. The moral for the profession seems to be that failure to take a swab and to use antitoxin in diphtheria renders the physician liable to prosecution for neglect—a severe penalty even if he is acquitted, in view of the cost of defense and the loss of reputation, unless the physician happens, like Hadwen, to be the leader of some antiscientific cult, when the result will be only further advertisement. In the lay press Hadwen is referred to as "Gloucester's idol," which argued that even if he were convicted and his name removed from the medical register it is doubtful whether more good would have been done than harm. As "the enemy of vaccination and of all antitoxins," he has made himself popular. As might be expected, Hadwen and his followers are exultant and treat the acquittal as a justification, although of course it is nothing of the kind. In his organ, the *Abolitionist*, one admirer breaks into poetry in his, or more probably her, admiration. Hadwen, who has a ready pen and such a command of rhetoric that he can make the most preposterous views plausible to the lay public, has contributed articles on his case to two Sunday papers. In *Reynolds Illustrated News* we have "Dr. Hadwen's Scathing Attack on Modern Treatment." Their representative was received by Dr. Hadwen after "his triumphal progress through the city following his acquittal." In his usual style, Hadwen says that the majority of the profession are opposed to him because "from their student days they are taught to bow to authority. They are not taught to think. Any one who does think for himself is treated as a pariah. This has been the tradition for centuries." When Harvey discovered the circulation of the blood, he was opposed by his medical brethren. (By the way, he appears to forget that Harvey did this by means of vivisection.) Semmelweis was persecuted by his colleagues for pointing out the cause of puerperal fever. "Medical fashions change like ladies' hats. It will not be very long, in my opinion, before the whole Pasteur system will be cast aside and a saner method of diagnosis and treatment adopted. I hope that my persecution and the enormous publicity which it has attained, even in distant China, India and Japan, from which I have received cablegrams, will do much to lead physicians to think for themselves." In the Sunday *Times* he repeats in different words this blatant nonsense. But evidently a large part of the public, including some newspaper editors, regard him as a great scientist who, for daring to differ from his colleagues and thinking for himself, has been made a martyr, and is thus a worthy successor of the great men to whom he has likened himself.

The Future Physician

At the opening of the session of the Westminster Hospital School, Mr. H. J. Waring, dean of the Faculty of Medicine of the University of London, and surgeon to St. Bartholomew's Hospital, in an interesting address on "The Medical Man of the Future," traced two great processes at work in medical investigation and treatment. The first is that of specialization, which is to a great degree inevitable, and, up to a point, welcome and desirable. But the process has its dangers; the specialist tends to work in isolation. The second outstanding feature in modern medicine is the recognition of fresh curative and ameliorative agencies and their continually extended employment. Gradually the forces of all the sciences are being focused on the great task of curing or relieving suffering humanity, incidentally revolutionizing the practice of medicine and surgery. The medical student of the future must spend more, and not less, time on the fundamental sciences. What is the cumulative effect of these two great developments? A patient in a large general hospital, the poor as well as the paying patient, has open to him larger, better facilities and resources than any patient outside, no matter how rich or well-to-do he may be. The investigation and treatment of disease requires a modern plant especially adapted for the purpose and a highly trained personnel such as one would find in any modern successful factory. He envisaged an organization of the medical profession in which cooperation, joint and united effort, would be the systematized normal practice, and when a patient needing advice from a physician would have brought to bear on his case all the resources for diagnosis and treatment at the disposal of a great hospital. The physician practicing alone will gradually make way for the group or partnership. Our so-called "pharmaceutical chemists," at present simply dispensers and compounders of medicines and venders of innumerable "patent" nostrums, will be available for the carrying out of many of the chemical investigations necessary in the elucidation of disease. Associated with each group might be an institution for the reception of patients, which he might call "the health institute" or hospital. It would be linked up with other similar institutions and with sanatoriums up and down the country, allowing for the treatment of patients in different climates and also of a wider choice of specialists. On the question of the organization of public health in the future, he urged that there was no justification for responsibility being divided among three or four departments of state. Various public services could be centralized, at any rate in the larger towns, and here was a subject in which the physician could bestir himself to advantage. He did not at present play the part which he should do in public affairs.

Abrams "Box" at the Antipodes

Mrs. Lawrence of Hamilton, New Zealand, has been awarded $10,000 damages against Dr. H. Dundas Mackenzie of Auckland in a case involving the Abrams "magic box." The damages were awarded for negligent treatment and false representation tending to needless delay and suffering before undergoing an operation for cancer elsewhere. Dr. Mackenzie gave evidence that when Mrs. Lawrence first saw him, she said that two physicians had advised an operation, which she refused. He administered the Abrams treatment, and she improved, but she did not allow the treatment to be continuous, and he suggested that the interruptions prevented success. He gave forty-five treatments at $5 each. The plaintiff's lawyer referred to the fantastic claims of the Abrams machine. It was claimed not only that the machine could diagnose and cure diseases, but also could tell a man's religion, and even predict the sex of an unborn child. The judge said that he understood that it could do more than that —determine the paternity of a child. For the defense it was

urged that any such claims were entirely apart from the Abrams method of treatment of disease. For the plaintiff it was pointed out that Dr. Mackenzie had represented to the plaintiff that he could cure her. She failed to derive any benefit from the machine, and until too late, he failed to advise an operation.

Regulation of Preservatives in Food

The final report of the departmental committee appointed by the minister of health last year to inquire into the use of preservatives and coloring matter in food has now been presented. The committee finds that it is undesirable to add to articles of food any material not of the nature, substance and quality of food, and recommends that the use of preservatives should be prohibited in all articles of food and drink offered or exposed for sale, except in a few definite and specific cases. The term preservative is not to include salt, saltpeter, sugar, vinegar, acetic acid, alcohol, spices, or the agents introduced into food by the process of curing known as smoking. By the term preservative in this report is meant any other substance which, when added to food, has the property of preventing, arresting, delaying or masking fermentation or putrefaction. Preservatives are stated to be used at present in a somewhat haphazard way, or as a trade custom, or even in ignorance. The committee rejects the plea that they are harmless. It groups them under three headings: Group 1: formaldehyd and its derivatives, and the fluorids; Group 2 (not so undesirable): boric acid and salicylic acid, and their salts; Group 3 (least harmful): benzoic acid and sulphurous acid, and their salts. The conclusion is reached that if preservatives in foods are necessary at all, they should be solely those in Group 3. This is of great importance, because at present in the majority of "preserved" foods chemicals of Group 2 are used. Boron preservatives are largely used in butter, cream, margarin, imported liquid eggs, sausages, potted meat, potted fish, and some beverages; they are also used for packing bacon and hams for export to this country, and are occasionally dusted over these articles of food. Large amounts are sometimes found. Thus, 175, 140 and 110 grains of boric acid per pound have been found in margarin, butter and bacon, respectively. As a rule, however, the quantity does not exceed, and rarely amounts to 35 grains per pound. One trade representative told the committee that 52 grains per pound was necessary for his product.

Salicylic acid and its salts were found in a number of articles, mostly beverages, including beer, gingerbeer and cordials, and also in some jam. As much as 17 grains per pound was found in sausages. Benzoic acid and sulphurous acid are also in use, but are less obnoxious. It is evident that at present a man may consume considerable quantities of preservatives in the course of an ordinary day's diet. It is easy to imagine a reasonable meal which might contain 20 or even more grains of boric acid, besides other preservatives.

The committee recommends that the use of preservatives should be prohibited in all articles of food and drink offered or exposed for sale, whether manufactured in this country or imported, except in a few definite and specific cases. Only two preservatives are to be permitted—benzoic and sulphurous acids and their salts. This conclusion was reached in America also. The principal exceptions in favor of which it is recommended that preservatives be allowed are: sausages, jam, dried fruit, fruit pulp, beer, cider, wines, cordials and fruit juices. In all these the suggestion is that sulphur dioxid should be permitted in definite quantities. Benzoic acid may be used as an alternative in certain wines and cordials, in sweetened mineral waters, and in coffee essences. The use of copper salts in the "greening" of peas is condemned. The preservative used must be declared on the label. The presence of preservatives in food, whether imported or not, should be declared in a manner to be prescribed by the minister of health. The committee admits that in some cases the declaration of the preservatives used may be difficult to enforce or the result may be undue harm to the industry without compensating advantage to the consumer. If so, exceptions might be made in their favor; but in all cases, and in particular that of sausages, the use of any preservatives in foods should be accompanied by a declaration of the nature and amount.

Cancer Among the Jews

Dr. Lester Samuels, lecturer to the British Empire Cancer Research Fund, has contributed an interesting article on cancer in his race. He points out that cancer in the Jewish race is peculiar in its method of attack. Its nature, virulence and powers are different from those in Gentiles, and its effect on the life of the sufferer is more prolonged. Cancer is found in nearly all races, affecting the negroes least of all. It is a disease of civilization, affecting those congregated in the large cities to a far greater extent than those who lead a country life. Cancer among the Jews has been keenly investigated by physicians the world over. In Italy, Lombroso found that, while the general population had a mortality from cancer of 2 per cent., the Jews had a mortality of 1.2 per cent. In England, a Leeds observer found that cancer of the uterus was almost unknown among Jewesses. In London, Dr. Samuels can find evidence of only one case out of 178 of cancer of the uterus in a Jewess. In the medical journals, observers state the same for cancer of the breast in Jewesses, and that, while examples of every known form of cancer have been found among Jews, there has seemed to be a special tendency to the development of intestinal cancer. The records of the United Synagogue Burial Society for three successive years show 525 deaths from cancer per million Jews to 800 deaths per million Gentiles—a striking difference. In the United States, Dr. Maurice Fishberg finds that the Jews are much less liable than the general population to succumb to cancer.

Whether the differences mentioned are due to the minute physiologic differences of race or to the many dietary laws of the Jewish people, it is difficult to say. The Jews are among the earliest civilized races. Did cancer begin its career among them? No physiologist has ever attempted to prove that there is any difference in the physiologic activities of the organism in different races. The Jewish dietary laws, says Dr. Samuels, are purely physiologic in principle. Has the long strict adherence to these laws, together with the body cleanliness natural to an observant Jew, given to the race a partial immunity from cancer?

PARIS

(From Our Regular Correspondent)

Oct. 31, 1924.

The Fourth Pediatric Congress

PROPHYLAXIS AND TREATMENT OF SYPHILIS IN CHILDREN

In regard to the prophylaxis of syphilis in the child, Dr. Léon Tixier of Paris emphasized that syphilitic pregnant women should receive two or three series of intravenous injections of arsphenamin or neo-arsphenamin. Tixier advises beginning with from 0.10 to 0.15 gm. of neo-arsphenamin and increasing the dose with each weekly injection by from 0.10 to 0.15 gm. until, as the maximal dose, from 0.45 to 0.60 gm. is given, according to the body weight and the tolerance of the patient, each series to consist of eight injections. In the absence of clinical signs of syphilis, two series appear sufficient—the first series during the second and third months, and the second series during the fifth and sixth months of pregnancy. When there are lesions in process of evolution, three series of injections should be

given: during the second and third months, the fifth and sixth months, and the eighth and ninth months.

As for the treatment of hereditary syphilis in the infant, rapid sterilization of the organism should be sought. In this respect, the arsenical compounds have a superiority over mercury. Tixier prefers intravenous injections, which may be made into the external jugular vein (Blechmann), the epicranial veins or into the superior longitudinal sinus.

In the discussion that followed, it became evident that Tixier's opinion in regard to the superiority of the intravenous route for arsenical injections was far from being shared by all his colleagues. Dr. Rocas of Bordeaux recommends subcutaneous injections of sulpharsphenamin to children under 18 months of age. The discussion showed also that mercury still has its advocates among pediatricians.

THE ETIOLOGY AND PATHOGENESIS OF RICKETS

Drs. R. Lesné, L. de Gennes and Vagliano (of Paris) surveyed recent researches of the English and especially of the American school on the genesis of rickets. These experiments have been verified by experiments of their own. These results were supplemented by the study of three factors that exert an unquestionable influence on rickets: cod liver oil, light and epinephrin. Cod liver oil, introduced into the organism by the parenteral route, loses its antirachitic action, although it still exerts an effect on growth. The active factor is therefore not a vitamin and is independent of vitamin A. The therapeutic effect of light, which has long been observed in the study of clinical facts, has been well established by recent researches. Lesné and de Gennes were able to show that the rays of the arc lamp or of the mercury vapor quartz lamp are, at least in our climate, infinitely more efficacious than solar rays. Léon Binet and Vagliano have studied also the preventive and curative action of epinephrin. We must emphasize the part played by confinement indoors and "solar deficiency," to use Woringer's expression.

Professor Marfan questioned attributing the principal cause of rickets to a lack of solar rays. His investigations show that severe rickets may occur in children who live in well lighted apartments, who get fresh air and sun frequently, even in winter. On the other hand, children living in dark quarters and who seldom go outdoors have been found free from rickets. In France, the influence of seasons on the frequency of rickets has not been clearly established. If the lack of light were actually the main cause of rickets, it would be difficult to explain why this morbid condition is just as frequent in the country as in the cities, and in Italy as in the countries of the North. Why, for example, is it unknown in Greenland, where, for almost four consecutive months, there is almost continual night, but where there is no syphilis and no artificial feeding?

Institute of Sanitary Technic

The undersecretary of state for technical instruction has organized an institute of sanitary technic in the Conservatoire national des arts et métiers. Sanitary technic is a requisite for engineers and physicians interested in the application of sanitary measures to cities, to architects and contractors engaged in the construction of private dwellings or apartment buildings and to the numerous specialists called on to decide questions pertaining to heating, lighting, ventilation and kindred subjects.

The Insufficient Appropriations for the Library of the Faculté de Médecine of Paris

In 1923, the budget of the library of the Faculté de médecine of Paris was around 44,000 francs, 12,000 of which was appropriated by the state and 2,000 by the city of Paris, while the dues paid by the students was supposed to make up the balance. For 1924, the already meager budget was reduced by 3,000 francs, so that the library had only 10,000 francs at its command for the purchase of books and 16,000 francs for subscriptions to journals and reviews, the remainder being needed for rebinding, administration expenses and other necessaries. It will be seen how insufficient the budget is in view of the present price of books. The library can buy only one copy of the current classic publications, which is therefore soon worn out. The insufficient appropriations, which have not been modified in keeping with the depreciation of the franc since the war, are not adequate to allow the purchase of all the new French medical books, not to speak of the acquisition of the more important foreign publications. It has also been necessary to discontinue many important periodicals.

Infant Mortality During Summer Months

In the *Gazette des hôpitaux*, Dr. J. Herber of Cette publishes some interesting statistical researches on infant mortality during the summer months. The data are taken from the reports in the "Statistique sanitaire de la France de 1906 à 1917." The total yearly mortality occurring in the warm months in the seventy-two cities of France with more than 30,000 inhabitants was as follows:

June	7.0 per cent.
July	9.1 per cent.
August	12.2 per cent.
September	9.9 per cent.

The results of these statistics correspond to the usual conception of infant mortality in summer. But if, instead of considering solely the total mortality, one notes the mortality of each city, it will be seen that the infant mortality of the summer months cannot be adequately expressed by a single curve, but requires three curves that are essentially different.

	First Type	Second Type	Third Type
June	9.4	6.6	6.0
July	12.1	8.9	6.8
August	10.3	12.5	10.7
September	7.6	10.0	12.3

Certain cities show a maximum in July, others in August, and a third group of cities have the highest infant mortality in September. On examination of the map of France, it will be noted that the cities of France that present the same type of curve may justly be grouped into one class. The cities of the first type, with the maximum mortality in July, are situated in the region whose climate is influenced by the Mediterranean. The cities of the third type, with the maximum mortality in September, are all located in the Northwest or West. The cities of the second type, with the maximum mortality in August, are the remaining cities of more than 30,000 inhabitants; that is, the majority of the cities of France. By a hasty generalization, the second type is usually accepted as representing the curve for France.

According to the annual report of the bureau of longitudes, the mean monthly temperature is usually highest in July. That being the case, the most common temperature curve is superposable on the mortality curve that is rather exceptional; namely, that of the Mediterranean basin, with the maximum mortality in July, and not on the curve of the majority of the cities of France, with the maximum mortality in August.

Whatever the influence of temperature on mortality may be, it acts in combination with other factors which are preponderant and which remain to be determined.

The Supply of Drinking Water for Paris

It has been discovered recently that the drinking water furnished the population of certain sections of Paris and its suburbs contains phenol (carbolic acid). The procurator of the republic, having received a report from the prefecture of the department of the Seine, has requested a judge of instruc-

tion to inquire into the matter. M. Lemarchand, member of the municipal council, has profited by this occasion to call the attention of the prefect to the general question of the supply of drinking water for Paris. He states that Paris consumes daily 600,000 cubic meters of water, half of which has to be drawn from the Seine or the Marne, which presents certain disadvantages. Furthermore, owing to the insufficient size of the mains and the inadequate pressure, in spite of the endeavor to adjust the height of the reservoirs to the needs of the city, it is impossible, at certain times, to secure any water at all in the upper stories of some of the buildings of Paris. In view of these facts, M. Lemarchand urged that a remedy be sought by securing additional sources of water supply.

The Centenary of Hippolyte Duprat

Toulon has recently celebrated the centenary of Hippolyte Duprat, formerly physician of the marine medical corps, who, after publishing many scientific treatises, resigned his post in order to follow his poetic and musical aspirations. He is the author of various musical compositions, one of which, "Pétrarque," an opera in five acts, was about to be given in Paris when the Franco-Prussian War of 1870-1871 broke out. The opera was afterward given in many theaters of France and Italy. In connection with the ceremonies in honor of the composer, a grand representation of "Pétrarque" was given in the city theater at Toulon.

BERLIN

(From Our Regular Correspondent)

Oct. 25, 1924.

The Influence of Climate on Health

At the recent meeting of German scientists in Innsbruck, Professor Dorno spoke on "The Physical Bases of Solar and Celestial Light and Their Application to Therapy." Since the various kinds of rays in their passage through the atmosphere are interrupted to a widely different extent, the solar spectrum varies according to the path of the rays, dependent on the height of the sun; hence, the sun in the zenith is a yellowish white, while the sun near the horizon may be blood red. The amplitude of the ultraviolet radiation varies widely from the total heat radiation. Although both are theoretically identical on July 15 at noon, the ultraviolet radiation on January 15 at noon is only one tenth, and, in the early morning of January 15, only one twentieth, as great as the heat radiation. It is not because the sun in summer is so much hotter, but because it dispenses a much higher percentage of ultraviolet rays that, with the sun in the zenith, marked injuries occur to the skin and even to the whole organism. The sun's rays in the spring are richer in ultra-red rays and in the autumn in ultraviolet rays. Also the quality of ultraviolet rays is subject to change; for, when the sun is higher in the heavens, and under the influence of certain meteorological factors, short-wave rays are transmitted, which have a powerful biologic effect, as is shown most clearly by erythemas and pigmentation. Our skin does not tan in winter, because the most effective rays are no longer present in the solar spectrum. Since the skin does not react by pigmentation (or if at all, very slightly) to ultraviolet rays with shorter wave lengths than occur in solar radiation, pigmentation may be regarded as Nature's chief means of protection against the short-wave ultraviolet solar rays. The pigment absorbs chiefly yellow and green rays, in the first of which lies the maximum of the sun's intensity, and transforms them into heat, which is given off through evaporation, serving to protect the interior of the body against strongly penetrating rays. This explains readily the observed parallelism between pigmentation and the degree of toleration for the sun's rays. The short-wave (mainly the ultraviolet) rays are completely absorbed by the skin; likewise the long-wave ultra-red rays; the short-wave ultra-red, the red and the yellow rays, on the other hand, penetrate to the inner tissues of the body. A sun bath in high altitudes, in spite of the greater intensity, invigorates, whereas, in the warm and damp air of the plain, it may prove enervating. The tropical sun is poorer in penetrating red rays and richer in short-wave rays, which heat mainly the outer skin; and, in the moist warm air of the tropics, the elimination of heat from the skin becomes more difficult. Here, therefore, we may easily find higher temperatures near the surface and lower temperatures in the deeper tissues of the body, which often produces baneful effects. The abundance of strongly penetrating ultra-red rays found in the spring sun furnishes an explanation for the frequently observed manifestations of fatigue caused by exposure to the sun's rays in spring. The more rapid growth of children at this season may be explained in like manner. The after-effects of the sun-bath are deserving of attention. Even though the subject does not resume his clothing after retiring to the shade from the sun-bath, from thirty to forty-five minutes are required for the added heat to be eliminated from the deeper tissues of the body, and if the subject dresses immediately after the sun-bath, there will be a marked after-effect lasting for several hours.

Also Professor Kestner of Hamburg gave his views on the effects of climate on health. The most evident effect of climate is exerted through the temperature. Warming the body reduces metabolism and induces perspiration, which is a protective mechanism. Perspiration may remove more fluids from the body than is generally believed. It has been established that a stoker on a ship in the tropics may eliminate 10 liters of perspiration during a working period. At the same time, considerable quantities of salt are eliminated, and that may be extended so far that, after great exertion, especially continuous exertion, there is no longer sufficient material in the body for the hydrochloric acid secretion of the stomach, whereby many hitherto unexplainable effects of overexertion are cleared up. Diminished air pressure and the resulting rarefied atmosphere in the more elevated regions may exert some influence, but this is not observable at elevations under 3,000 meters, so that it need not be considered with reference to European settlements. In closed rooms, with closed windows, the therapeutic effects of climate are scarcely noticeable.

Gongs on Emergency Ambulances

According to a new police order, emergency ambulances may be equipped with gongs, the same as is the apparatus of the fire department, in order that they may be given the right of way in the streets.

Marriages

EDWARD GILMAY WATERS, Jersey City, N. J., to Miss Edna May M'Cabe of Derby, Conn., October 28.

RILEY HENRY GUTHRIE, Smithville, Ark., to Miss Anna Patricia Hoye of Little Rock, August 16.

CORNELIUS S. CONKLIN, Bridgeport, Conn., to Miss Josephine Baldwin of Stratford, September 15.

HAROLD M. BOWCOCK, Atlanta, Ga., to Miss Bob Taylor Tarver of Augusta, November 10.

ARTHUR J. ROBERTS, Ecorse, Mich., to Miss Erma Ransom of Essex, Ont., Canada, October 9.

HAROLD EMERSON FARNSWORTH to Miss Laura Holmes, both of Storm Lake, Iowa, August 2.

CLINTON E. BANE, Mather, Pa., to Miss Mary Riggle of Clarksville, November 5.

ARTHUR T. MCCORMACK to Mrs. Jane Dahlman, both of Louisville, Ky., recently.

EDWARD ALBERT ROLING to Miss Celia Walsh, both of Chicago, November 5.

Deaths

Morris Booth Miller, Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1889; member of the Philadelphia Academy of Surgery; emeritus professor of surgery at the Graduate School of Medicine of the University of Pennsylvania; served in the M. C., U. S. Navy, during the World War; aged 56; died, November 5, of heart disease.

John Bernard Boucher ✠ Hartford, Conn.; College of Physicians and Surgeons, Baltimore, 1894; past president of the Hartford County Medical Society; on the staffs of St. Francis Hospital, Hartford, St. Mary's Hospital, Waterbury and the Middlesex Hospital, Middletown; aged 60; died, November 5, of heart disease.

Louis F. Love ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1881; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staffs of the Misericordia and St. Mary's hospitals and the House of Good Shepherd; aged 63; died, November 3, of heart disease.

Edwin Sternberger ✠ New York; Medical Department of Columbia College, New York, 1890; served in the M. C., U. S. Army, with the rank of captain, during the World War; on the staff of the Monmouth Memorial Hospital, Long Branch, N. J.; aged 57; died, November 1.

Ralph Schuyler Goodwin ✠ New Haven, Conn.; Medical Department of Columbia College, New York, 1893; formerly clinical assistant in pediatrics at the Yale Medical School, New Haven; past president of the Litchfield County Medical Society; aged 56; died, October 9.

Robert Alvin Marsh, Edgefield, S. C.; College of Physicians and Surgeons, Baltimore, 1897; member of the South Carolina Medical Association; member of the state board of health for six years; aged 52; was found dead, October 27, of cerebral hemorrhage.

Edgar Eckley Moore, Marshall, Va.; University College of Medicine, Richmond, 1905; member of the Medical Society of Virginia; served in the M. C., U. S. Army, during the World War; aged 46; died, October 27, of cerebral hemorrhage.

James Melville Fisher, Mayfield, Calif.; Hospital College of Medicine, Louisville, Ky., 1906; member of the California Medical Association; served in the M. C., U. S. Army, with the rank of captain, during the World War; aged 47; died, October 3.

Branch Tucker Fields, Greensboro, N. C.; University College of Medicine, Richmond, 1912; member of the Medical Society of the State of North Carolina; on the staff of St. Leo's Hospital; aged 38; died, October 23, of heart disease.

Moses Amberg Fechheimer ✠ Detroit; Detroit College of Medicine and Surgery, 1899; member of the American Urological Association; formerly instructor in biology at his alma mater; aged 49; died, November 4, of heart disease.

Ralph M. Strayer, Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1923; aged 35; on the staff of the Franklin County Sanatorium, where he died, October 16, of injuries received when struck by an automobile.

Mary Appleton, New York; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1899; member of the board of health; aged 53; died, November 1, of accidental asphyxiation.

George C. Mason, Oakland City, Ind.; Medical College of Indiana, Indianapolis, 1879; member of the board of education; formerly member of the state legislature; aged 76; died, November 5.

William Douglas Wells, Baltimore; University of Maryland School of Medicine, Baltimore, 1896; aged 51; died, October 25, at the University of Maryland Hospital, following an operation.

Richard A. Grainger ✠ Paris, Tenn.; Vanderbilt University Medical Department, Nashville, 1882; University of Nashville Medical Department, 1884; aged 67; died, October 25, of heart disease.

Charles Elmore George, Grubbs, Ark.; University of Arkansas Medical Department, Little Rock, 1909; aged 56; died, October 25, at St. Bernard's Hospital, Jonesboro, of heart disease.

Douglas McCardell ✠ Coldspring, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1889; aged 59; died suddenly, October 25, of heart disease.

Samuel C. Seiple, Center Square, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1867; Civil War veteran; aged 82; died, October 31, of cerebral hemorrhage.

Baruch Last, New York; University and Bellevue Hospital Medical College, New York, 1912; member of the Medical Society of the State of New York; aged 40; died, October 28.

William J. Brinks, Manitou, Okla.; American Medical College, St. Louis, 1894; member of the Oklahoma State Medical Association; aged 62; died, October 7, of peritonitis.

Harry Greenberg ✠ Milwaukee; Cleveland (Ohio) College of Physicians and Surgeons, 1897; formerly on the staff of Mount Sinai Hospital; aged 51; died, October 30.

Wilson Bowers, Philadelphia; Jefferson Medical College of Philadelphia, 1891; aged 58; died, October 30, at the Memorial Hospital, of septicemia, following a carbuncle.

Lester Warren Hanson, Montpelier, Vt.; Dartmouth Medical School, Hanover, 1868; member of the Vermont State Medical Society; aged 79; died, October 27.

Howard Y. Neiman, Pottstown, Pa.; Jefferson Medical College of Philadelphia, 1879; on the staff of the Pottstown Hospital; aged 65; died, November 1.

Charles Wesley Rarick, Greenville, Ohio; Physio-Medical Institute, Cincinnati, 1883; Civil War veteran; aged 81; died, October 31, following a long illness.

James Edmund Gaston, Cochranton, Pa.; Cleveland (Ohio) University of Medicine and Surgery, 1896; aged 50; died, October 31, following a long illness.

Bertine S. Erwin, Mauch Chunk, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1871; aged 79; died, October 28, of heart disease.

Marvin Erastus Moreland ✠ Birmingham, Ala.; Kentucky University Medical Department, Louisville, 1903; aged 49; died, October 30, of pneumonia.

Judson W. Hanson, Columbia, Mo.; Cleveland (Ohio) University of Medicine and Surgery, 1872; aged 80; died, October 24, of chronic endocarditis.

Carroll Lawrence Storey ✠ Detroit; Rush Medical College, Chicago, 1903; aged 47; was accidentally drowned, November 3, at Mount Clemens, Mich.

Herbert R. Hammond ✠ Chicago; Rush Medical College, Chicago, 1894; aged 55; died, November 2, at his home in Oak Park, Ill., of tuberculosis.

Robert A. Johnson, Flatonia, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1888; aged 85; died, October 24.

Dee Wolcott Pierce, Savannah, N. Y.; Syracuse University College of Medicine, 1896; aged 59; died, October 24, following a long illness.

Harry Angelo Pawling, Watertown, N. Y.; University and Bellevue Hospital Medical College, New York, 1899; aged 50; died, October 24.

William Henry Richardson, Springfield, Mo.; St. Joseph Hospital Medical College, 1881; aged 69; died, October 27, at a local hospital.

Eugene R. Hochstetter, Ridgedale, Tenn.; Medical College of Ohio, Cincinnati, 1876; aged 73; died, November 4, following a long illness.

C. A. Marshall, Plattsmouth, Neb. (years of practice); president of the school board for twenty-four years; aged 68; died, October 23.

John F. Rood ✠ Darien, Wis.; Chicago (Ill.) Medical College, 1881; aged 66; died suddenly, November 7, of cerebral hemorrhage.

Alfred Russell Starr, New York; Medical Department of Columbia College, New York, 1880; aged 66; died, October 27.

William Franklin Elliott, Nashville, Tenn.; University of Nashville Medical Department, 1882; aged 65; died, October 26.

William Edward Walker, McKeesport, Pa.; Long Island College Hospital, Brooklyn, 1881; aged 68; died, October 24.

August Siebert, St. Louis; Bohemian University of Prague, Austria, 1900; aged 54; died, October 26, of heart disease.

August J. Crance, Pasadena, Calif.; Eclectic Medical Institute, Cincinnati, 1881; aged 65; died, October 21.

Allen E. Wheeler, Milwaukee (licensed, Wisconsin, 1900); Confederate veteran; aged 95; died, October 25.

Lorenz Welges, Woodland, Calif. (licensed, California, 1876); aged 86; died, August 29, at Sacramento.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

"SAN-GRI-NA"

Another Fake Obesity Cure

"San-Gri-Na is the formula of a French physician. It has been used in Europe by millionaires, actresses and hundreds of fat men and women because it is simple, easy, pleasant and harmless."

Thus runs part of the advertising claptrap of San-Gri-Na, one of the recent entrants to the "obesity cure" field. San-Gri-Na is put out by the somewhat imposingly named "Scientific Research Laboratories" of 350 West Thirty-First Street, New York City. Three or four years ago there used to be a "Scientific Research Laboratories" in Scranton, Pa., which seems to have been in the hair tonic business. Whether there is any connection between the Scranton and the New York City concern, we do not know. The proprietor of the New York company seems to be one Earl F. Callan, he having taken over the business from W. E. Learned some time last year. Callan and his brother seem to be in the seed business and, apparently, the Scientific Research Laboratories is merely a name for the mail-order business which is said to be conducted in a loft at the address given.

Part of the advertising for San-Gri-Na features the testimonial of "Dr. J. J. Rudolph," a "former Health Commissioner." There seems to have been a Dr. J. J. Rudolph who was health commissioner of Hoboken, N. J., some ten or twelve years ago. Whether this is the indvidual referred to by the San-Gri-Na concern, we have no means of knowing. However, according to our records, there is no other man of this name in the United States who is legally entitled to practice medicine.

San-Gri-Na is exploited in the manner common to quackery of this type. It is said to be the "amazing discovery" of a "Dr. Narbonne," who is described as a famous French scientist. Part of the advertising paraphernalia consists in what purports to be a letter from Madame Elaine of Paris. This details to the gullible obese just how Madame reduced herself 50 pounds in two months' time by the San-Gri-Na method.

"My heart just seemed to beat with joy at the prospect of getting into one of the chic ready-made dresses at a store, size 36, which I now wear instead of a 46 which was too tight."

Then follow further encomiums on the cure leading up to the advice:

"So don't delay, don't doubt, simply fill out the enclosed ordering form and mail it with your remittance NOW!"

In addition to being sold on the mail-order plan, San-Gri-Na is also on sale in the drug stores, and expensive newspaper advertisements lure the "stylish stouts" to the local drug counter. San-Gri-Na comes in tablets, and the concern that puts it out seems to find no difficulty in relieving the public of $1.50 for fifty of these tablets. With each box comes a small leaflet giving the alleged theory on which the tablets act, together with instructions for taking them. According to this leaflet, "Dr. Narbonne," the "famous French scientist," discovered in the course of his researches that in all fat people "there exists a certain condition in their systems which transforms their food into flabby fat instead of enriching their blood by making healthy, red corpuscles." A man from Mars might suppose that it would be impossible in this year of grace, when at least the rudiments of physiology are taught in school, to find people who would swallow such egregious nonsense as that just quoted. But a generation which accepts chiropractic, the Electronic Reactions of Abrams, "Christian Science," Naturopathy and similar nonsense may be excused for taking seriously the San-Gri-Na school of physiology.

The newspaper advertisements convey to the obese public the idea that it is unnecessary to exercise or diet, the only desideratum being the purchase of San-Gri-Na. When the stuff has been bought, however, the purchaser finds that in addition to taking San-Gri-Na she should take the juice of one lemon in a glass of warm water every morning, chew her food very thoroughly, eat only two or three light meals a day, sleep not more than six or seven hours, do a "reasonable amount of walking," take no liquid with meals, avoid starches, fats and candy! The instructions remind one of the lady who found great relief from constipation by reading two chapters of "Science and Health" daily—and taking a dose of salts.

Specimens of San-Gri-Na were purchased on the open market and turned over to the A. M. A. Chemical Laboratory for analysis. The chemists' report follows:

LABORATORY REPORT

"Four original packages of San-Gri-Na, manufactured by the Scientific Research Laboratory, New York, were submitted to the Chemical Laboratory for examination. Each package contained fifty yellowish-gray tablets having an average weight of 0.42 gm. (6½ grains) each. No information concerning the composition of San-Gri-Na appeared on the label of the preparation or in the circulars accompanying the package, except the statement that it did not contain any habit forming drugs. An aqueous extract of the powdered tablets gave an acid reaction to litmus. Tests indicated the presence of free sulphur, phenolphthalein, calcium, potassium, small amounts of sodium, carbonate, tartrate, starch, traces of reducing sugar, and an acid-insoluble substance, probably talc. A vegetable extractive, which had a faintly bitter taste,

GIRLS! THROW AWAY YOUR FAT! LOOK YOUR BEST THIS SUMMER
FORMER HEALTH COMMISSIONER RECOMMENDS FRENCH DISCOVERY TO TAKE OFF FAT
READ THIS LETTER

Two typical 1924 San-Gri-Na advertisements. In the original these measured about 9 inches by 6 inches.

but no other distinctive properties, was present. Under the microscope the starch was identified as derived from arrowroot.

"No alkaloids, emodin-bearing drugs, such as cascara, senna and rhubarb, heavy metals, ammonium salts, strontium salts, magnesium salts, sucrose (cane sugar), lactose (milk sugar), nitrates, chlorids, bromids, iodids, organically combined iodin, sulphates, phosphates or glycyrrhiza were found. Neither were there found any extracts from thyroid and bladderwrack, drugs sometimes used in obesity remedies. The ash had an alkaline reaction to litmus paper and contained sulphates, due to the oxidation of sulphur in the presence of alkalis.

"Quantitative analysis of San-Gri-Na gave the following results:

"Moisture	2.84 per cent.
"Ash	35.37 per cent.
"Acid-insoluble ash (talc)	3.61 per cent.
"Phenolphthalein	2.11 per cent.
"Sulphur	32.93 per cent.
"Calcium (Ca^{++})	4.49 per cent.
"Sodium (Na^{+})	0.63 per cent.
"Potassium (K^{+})	4.62 per cent.
"Tartrate ($C_4H_4O_6^{=}$)	16.26 per cent.
"Starch	10.80 per cent.

"The calcium was calculated to calcium carbonate and the tartrate to potassium bitartrate. A determination of the tartrate radical and calculation to potassium bitartrate gave slightly lower results than if all the potassium had been calculated to potassium bitartrate. It seems probable that this small excess of potassium and the sodium are derived from the plant extractive present. From the results of the

analysis, the composition of San-Gri-Na may be calculated to be essentially as follows:

"Sulphur	33 per cent.
"Potassium bitartrate (cream of tartar)	21 per cent.
"Vegetable extractive and undetermined	15 per cent.
"Calcium carbonate (Precipitated chalk)	11 per cent.
"Arrowroot starch	11 per cent.
"Talc	4 per cent.
"Moisture	3 per cent.
"Phenolphthalein	2 per cent.

"Sulphur and cream of tartar constitute a well known, slightly aperient mixture in medicine. The two substances are mixed in various proportions but are not combined with phenolphthalein or precipitated chalk. The formula described in the National Formulary 'Troches of sulphur and potassium bitartrate' contains five times as much sulphur as cream of tartar. In San-Gri-Na the sulphur is present in about the proportion of three to two. A daily dose of 6 tablets of San-Gri-Na contains about ¼ grain of phenolphthalein, 13 grains of sulphur and 8 grains of cream of tartar. The average single dose as given in the U. S. Pharmacopeia for each of these drugs is 2½ grains, 60 grains and 30 grains, respectively."

In the light of the chemists' analysis, it seems that the amazing discovery of the famous French scientist is essentially sulphur and cream of tartar, with a small quantity of the laxative phenolphthalein. Various large pharmaceutical houses of the country carry in stock tablets of sulphur and cream of tartar, which are quoted at 35 cents a hundred.

The public may ask, What is there about San-Gri-Na tablets that will reduce? The answer is, nothing; they won't reduce. There are always optimistic overweights, however, who will willingly part with good money for anything, however worthless, that may be recommended for weight reduction. This ever hopeful army of easy marks makes the obesity cure game a profitable one.

PIXALBOL NOT ADMITTED TO N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

Pixalbol is the name under which E. Bilhuber, Inc., New York, markets a colorless tar preparation manufactured by Knoll and Company, Ludwigshafen a. Rh., Germany. It is claimed to be identical with the preparation formerly sold in the United States by Knoll and Company as Anthrasol.

The trademark on the word "Anthrasol"—along with many other patents and trademarks on medicinal substances—was seized by the United States government during the late war and sold by our government to the Chemical Foundation, Inc. The product may be marketed in the United States under the name "Anthrasol" only with the consent of the holder of the right to the trademark. The Chemical Foundation has for its purpose the development of an American chemical industry and, on payment of a nominal fee, it issues a license for the use of a trademark to any American citizen or corporation deemed competent to produce a product that shall be of a quality equal to that of the original. When a product is not available on the American market, the Foundation may grant permission to import it while its manufacture is being developed in the United States.

The recognition of the product Anthrasol under the new proprietary name "Pixalbol" was considered by the Council. In consideration of the abuses which are connected with the application of proprietary names to medicinal articles, the Council recognizes such names only when they are in the interest of public welfare. Since the product in question was introduced under the name Anthrasol, the Council decided that it is not in the interest of medicine that further proprietary names be applied to it.

In informing E. Bilhuber, Inc., of this decision, the Council explained that it would give consideration to the product if marketed as Anthrasol under license from the Chemical Foundation, Inc., or under a satisfactory, descriptive, nonexclusive name.

Correspondence

"PROPHYLAXIS OF ROENTGEN-RAY OVERDOSAGE"

To the Editor:—In THE JOURNAL, November 8, I note a short article by Dr. R. H. Rulison on this subject, reporting a case of senile keratosis of the face suggesting malignant degeneration which he treated by giving a dose of roentgen ray with the following setting: 8 inch spark gap, 5 milliamperes of current, 10 inch distance and 3.9 minutes of time. He states that he made a mistake and omitted the filter, and that the total skin dose that he administered was 4⅛ skin units, which, he says, was sufficient to cause a severe burn of the skin when passing through a 1 inch opening in a lead screen. He then goes on to state that by the use of the Kromayer lamp in this case, giving treatment every day or so for about two weeks after the above dose had been given, he was able to prevent a burn from occurring, and he concludes that the Kromayer lamp is therefore a highly desirable adjunct for preventing the evil effects of roentgen-ray overdosage.

For many years, some of our most prominent radiologists have been giving much larger dosages of unfiltered rays than he used without causing any burns and without the use of the Kromayer lamp treatment after the dose had been applied. Thus, G. W. Grier, in an article on "Radiotherapy in Superficial Malignancy" (*J. Radiol.* **2**:39 [Nov.] 1921), says:

> The selection of a proper dose for each lesion will, of course, require a certain amount of judgment and experience. Our standard treatment as enumerated above consists of 50 ma. minutes at 8-inch skin focus distance, 6½-inch parallel gap and no filter. We give from one to four of these treatments, allowing an interval of one day between treatments, or the treatments may be given daily. There seems to be no logical reason why the treatment should not all be given at one sitting, varying the time factor only. We have made several tentative trials at this change in technic, but not very successfully, and each time have reverted to the method of treating every other day up to four treatments. Our difficulty in giving the dose all at one sitting has been to judge correctly the length of treatment necessary to replace two, three or four treatments on alternate days. One treatment of seventeen minutes seems to give the same result as two ten-minute treatments given on alternate days, but beyond this we have made no progress. The interval between treatments should not be more than two days, or the effect will be different.

Grier recommends as a routine an unfiltered dose which would correspond to 9⅛ skin units (if figured in same manner that Dr. Rulison has figured his skin units) at each treatment, and this repeated for from one to four treatments at intervals of every other day; or, when one seventeen minute exposure is given, of 15⅛ skin units all at one time.

I have been following the intensive method of treating skin malignancies that Grier uses for quite a few years. I have given many senile keratoses a dose of 8 skin units of unfiltered rays at one exposure and have never seen a burn result. In fact, it is surprising to note the enormous dose of roentgen rays that the skin can stand, provided the area exposed is small. With the extremely intensive method that Grier recommends there is, of course, a severe radiodermatitis that develops; but this destroys the malignancy and in the due course of time heals over without any additional treatment whatever. In fact, Grier reports 296 cases of superficial malignancy cured out of 315 by this treatment, and my own records show nearly as high a percentage of cures.

This report is not made with any intention of undermining the Kromayer lamp treatment, although I am quite sure that it had nothing to do in preventing a burn in the case that Dr. Rulison reported. Whether or not it is actually effective as a prophylaxis for roentgen-ray overdosage, I am unable to state, having had no personal experience with it.

HAROLD SWANBERG, M.D., Quincy, Ill.

To the Editor:—In THE JOURNAL, November 8, R. H. Rulison states that he gave, through error, a dose of 8 inch spark gap, 5 milliamperes, distance 10 inches and with no filtration, and that treatment with a Kromayer lamp prevented untoward results. For four years we have treated from one to six or seven skin epitheliomas a day, with from five to twenty minutes of unfiltered roentgen-ray exposure, with an 8 inch spark gap, 5 milliamperes and 10 inch distance, and in all of these hundreds of cases we have not had one that did not heal promptly without any medication or therapy whatever and in many of them there was no untoward reaction. Five minutes, unfiltered, is our minimum time, and it may go to twenty minutes, depending on the size and duration of the skin lesion.

I do not want to see ultraviolet radiation receive too much credit for too many conditions.

ARTHUR K. OWEN, M.D., Topeka, Kan.

"THE UNDERTAKER AND POSTMORTEM EXAMINATIONS"

To the Editor:—Apropos of the editorial on this subject (THE JOURNAL, November 8, p. 1514), you may be interested to know that during my fifty-four years' service at the Army Medical Museum, Washington, I made some 1,500 postmortem examinations, but, although the list included persons in public life, lawyers, physicians, pharmacists, army and navy officers, nearly all ages, both sexes, I never made such examination on an undertaker or member of his family. But I must say that some undertakers are very helpful in the work.

D. S. LAMB, M.D., Poplar Hill, Md.

A MEDICAL EPITAPH

To the Editor:—While on a pilgrimage of discovery to certain little known parts of old London, I visited the extremely interesting Southwark Cathedral, of which, for example, John Harvard was a parishioner, and there came across the following epitaph, which may interest some of your readers. The inscription was placed above the reclining, full-sized figure of a seventeenth century medical practitioner in flowing wig and gown, one hand supporting his head, the other holding a small book, with forefinger between the pages at (presumably) the place describing his favorite formula. The exact date of his death or of the erection of the monument is not given, but a rude subscription is added to the effect that the tomb was repaired in 1741, which may account for the transitional orthography:

Here Lockyer lies interred. Enough his name
Speaks one had few competitors in fame—
A Name soe Great soe Generall may scorne
Inscriptions wh. doe vulgar tombs adorne.
A diminution tis to write in verse
His Eulogies wh. most men's mouths rehearse.
His virtues and his PILLS are so well known
That envy can't confine them under stone
But they'l survive his dust and not expire
Till all things else at the universal fire.
This verse is lost, his PILL embalmed him safe
To future rimes without an epitaph.

Panegyrics on the all-healing pill as the special property of the physician are not, of course, as common as they were some three centuries ago, but the doctrine of the panacea is, under various guises, still taught in many countries that shall be nameless here. No sooner does some modern St. George kill one dragon than other reptilian forms spring up. This observation does not reflect on Dr. Lockyer, however, who was doubtless a kindly and useful member of the community, and, moreover, did not himself write the bombastic lines just quoted.

CASEY A. WOOD, M.D., London, England.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PAINODYNES AND NEURODYNE

To the Editor:—I have received several advertisements from the William A. Webster Company concerning their Painodynes, in which they printed their purported formula of the preparation. I am not particularly interested in it, as I generally find everything I need in our regular materia medica; but, out of curiosity, I wrote and asked them what their "Neurodyne" is, as it seems to be the important ingredient in the mixture. They sent me the enclosed letter, which you will note is full of meaty information, but which must go over the heads of most of the profession, as it does over mine. If you can translate this long chemical name into words of one syllable, it may save a lot of headaches in those who might go to the trouble of trying to look it up in a textbook on chemistry, and will probably save me from the fate suffered by the famous cat, to whom curiosity proved lethal.

J. B. H., M.D., Nevada.

ANSWER.—According to the label on the bottle, Painodynes (sold by the William A. Webster Company, Memphis, Tenn.) consists of "An organic compound containing Neurodyne 5 grains, Theine Citrated ½ grain combined with triple bromides ½ grain." The letter of "information" sent our correspondent by the Webster concern regarding Neurodyne is as follows:

For your information will advise that Neurodyne (Ortho Hydroxybenzoic Acetic Acid Ester) which is an analgesic and anodyne of the highest order. And it might be incidentally stated that this compound as used in the manufacture of Painodynes is of the highest degree of purity—being entirely free from injurious by-products and other impurities. Thus, the utmost beneficial effects of the drug are obtained without untoward results.

Ortho Hydroxybenzoic Acetic Acid Ester is a ridiculously long drawn out name for acetylsalicylic acid (aspirin). Tests made in the American Medical Association Chemical Laboratory indicated the presence of this substance in Painodynes. The firm's statement that the compound "is of the highest degree of purity—being entirely free from injurious by-products and other impurities" could not be confirmed, as the amount of free salicylic acid in the specimen examined was much greater than that permitted for the various brands of acetylsalicylic acid described in New and Nonofficial Remedies. Furthermore, the laboratory, using an extremely sensitive test, was unable to find any "citrate" present, although "Theine citrated" is declared. (Thein is a little-used name for caffein.) These discrepancies, however, are not surprising, as the firm has pleaded guilty in the District Court of the United States a number of times to the charge of adulteration and misbranding—and one of the products was Aspirin Tablets! On the face of it, the product itself belongs to the class of irrational shotgun mixtures, marketed with unwarranted claims.

An article discussing the William A. Webster Company (and the Direct Pharmaceutical Company of St. Louis, apparently a sales agency) appeared in THE JOURNAL, Oct. 18, 1919, p. 1231.

PROPHYLACTIC VACCINATION OF ANIMALS AGAINST RABIES

To the Editor:—Is the prophylactic vaccination of the animal against rabies practical, and if so, how long does it protect them? How many injections are necessary to produce immunity? Would you advise that it be done? I ask this as several of my friends have very valuable dogs, and I suggest that they be vaccinated. If advised, can the virus be obtained from any commercial biologic laboratories?

R. K. BRAGONIER, M.D., Keystone, W. Va.

ANSWER.—The prophylactic vaccination of dogs against rabies is a practical procedure, and can be usually accomplished by the six-dose or the single dose treatment. These products can be obtained from the various commercial biologic houses.

In experimental work conducted by the Bureau of Animal Industry on the single injection method of vaccination, a street virus was encountered against which little protection was afforded vaccinated dogs. Against other street viruses, distinct protection was obtained by this method. The efficiency of the six-dose treatment against this atypical virus is being investigated.

Unless dogs are running at large in a district where rabies is prevalent; in other words, unless there is a possibility of exposure to rabies infection, no need is seen for vaccination.

"OBLIGATION OF PHYSICIAN TO RESPOND TO CALLS"

To the Editor:—I have just read your reply to "Obligation of Physician to Respond to Calls" in Queries and Minor Notes (THE JOURNAL, October 25). May I suggest that a further word would be useful in the first paragraph, regarding the method by which the physician who has "begun the treatment of a case" can give it up so as not to be legally responsible for refusing a call. Having started to treat a case, he is not permanently bound to that case against his will. As I understand the matter, due notice that he will not respond to a call, giving the patient reasonable time to make other arrangements, relieves the physician from legal responsibility.

HENRY P. HAMMOND, M.D., Franklin, Pa.

ANSWER.—A physician may retire from a case at any time, with the consent of the patient, except in the case of a minor child, when the consent of a parent is necessary, or in the case of a patient of unsound mind, when the consent of the guardian should be obtained. If such consent cannot be obtained, the physician must give notice to the responsible person—patient, parent or guardian—of his intention to retire, stating when he will discontinue attendance. Such notice should be sufficiently clear to avoid any misunderstanding, and in any case in which contention is liable to arise, should be given in such a way as to be susceptible of proof. Before the physician actually retires, a sufficient time must be allowed to elapse to enable the patient with reasonable effort to obtain other adequate medical service. The retiring physician should give his successor such information and advice concerning the case as may be necessary to permit the change of physician to be made without harm to the patient.

EKSIP

To the Editor:—Several days ago I read an advertisement in one of the Philadelphia Sunday newspapers, entitled "Eat and Get Well," addressed to diabetics. Out of curiosity, I answered the advertisement and, in reply, received the enclosed literature on the subject. I also enclose the advertisement from the newspaper. It seems criminal that such charlatans can continue to ply their trade.

C. R. BAKER, M.D., Philadelphia.
Lieutenant Commander, M. C., U. S. Navy.

ANSWER.—The "literature" that Dr. Baker sends in is that distributed by Matthew Richartz, who is exploiting persons with diabetes in the sale of the nostrum "Eksip." Eksip was given a brief notice in the Propaganda department of THE JOURNAL, April 1, 1922. The A. M. A. Chemical Laboratory reported that the Eksip tablets were found to consist mainly of magnesium carbonate and starch, with a small quantity of an unidentified drug having no medicinal characteristics. The trend of the Eksip advertising is to make the diabetic patient believe that it is unnecessary for him to restrict his diet, provided he uses Eksip. As Dr. Baker says, it does seem criminal that charlatans should be permitted to promulgate such deadly advice for the sole purpose of selling their wretched nostrums. What, however, shall be said of the presumably respectable Philadelphia newspaper that carries the advertisement for this humbug and makes it possible for the charlatan to get his victims?

SPANISH-ENGLISH MEDICAL PHRASE BOOK

To the Editor:—Where can I obtain a medical phrase book in English and Spanish? I will appreciate any information you can give me in the matter. I have similar books in French, German and English, but have not been able to get hold of one in the Spanish language.

F. S. SPEARMAN, M.D., Cimarron, N. M.

ANSWER.—The need of a good Spanish-English medical phrase-book and a dictionary has prompted the American Medical Association to undertake the publication of both. This is nearly complete, and notice of it will appear in the Spanish Edition and in THE JOURNAL as soon as it is off the press.

THE CONVERSE EPILEPSY CURE OF H. E. SANDERSON

To the Editor:—I am enclosing literature addressed to "The Mayor, Elmore, Minn.," which, in this case, happens to be myself. Perhaps these methods should be exposed to the general public.

FAUS P. SILVERNALE, M.D., Elmore, Minn.

ANSWER.—Dr. Silvernale encloses with his letter an advertising leaflet from H. E. Sanderson, Columbus, Ohio, offering to send him a "Famous Cook Book" for the names of two people suffering from epilepsy; a "Favorite Song Book" for one name; a "Self-Pronouncing Dictionary" for four names, and a "Self-filling Fountain Pen" for three names. H. E. Sanderson is the head of an outfit that puts out an alleged cure for epilepsy under the name of the "Converse Treatment." He has for years used this method of obtaining a "sucker list" of epileptics. His methods were described in the Propaganda department of THE JOURNAL, Dec. 2, 1922, and the Converse Treatment itself was analyzed and exposed in the same department as long ago as April 24, 1915. The latter is reprinted in the pamphlet "Epilepsy Cures." Of course, the "cure" itself is the usual bromid mixture.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

DELAWARE: Wilmington (Regular and Homeopathic), Dec. 9-11. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

KENTUCKY: Louisville, Dec. 9. Sec., Dr. A. T. McCormack, State Board of Health Bldg., Louisville.

MARYLAND: Baltimore, Dec. 9-12. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

OHIO: Columbus, Dec. 10-12. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

RHODE ISLAND: Providence, Jan. 1-2. Sec., Dr. B. U. Richards, State House, Providence.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 720 Anchor Bldg., Roanoke.

New Jersey June Examination

Dr. Alexander Macalister, secretary, New Jersey Board of Medical Examiners, reports the written examination held at Trenton, June 17-18, 1924. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 56 candidates examined, 49 passed and 7 failed. Of the 7 osteopaths examined, 6 passed and 1 failed. Of the 17 chiropractors examined, 2 passed and 15 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Georgetown University	(1923, 3) 85.6, 86.1,	86.1
Boston University	(1923)	85.3
Columbia University	(1923, 2) 84.3,	86.7
Cornell University	(1922)	86.1
Hahnemann Medical College and Hospital of Philadelphia	(1920) 82.3, (1921) 81.2, (1923, 4) 82.9, 84.1, 85. 6,	85.8
Jefferson Medical College	(1923, 6) 82.5, 84.1, 84.9, 86.1, 88.2,	89.4
University of Pennsylvania	(1922, 3) 84.4, 85.1, 85.2, (1923, 4) 83.9, 86.2, 87.4, 89.5	
Woman's Medical College of Pennsylvania	(1922)	89.5
University of Virginia	(1923)	85.3
McGill University Faculty of Medicine	(1922) 85, (1923)	85.8
Queen's University Faculty of Medicine	(1923)	79.5
University of Vienna, Austria	(1915)* 85.8, (1922)*	80.7
German University of Prague, Czechoslovakia	(1921)*	80.7
University of Berlin, Germany	(1911)* 79.7, (1920)*	78.7
University of Bonn, Germany	(1918)*	75
University of Erlangen, Germany	(1920)*	78.1
University of Kiel, Germany	(1922)*	80.2
University of Wurzburg, Germany	(1922)*	82.8
University of Budapest, Hungary	(1910) (1912)* 85.6, (1920)* 77.6	78,
University of Naples, Italy	(1916)* 75, (1921)*	77.1
University of Kharkov, Russia	(1910)*	82.1
University of St. Vladimira, Kief, Russia	(1914)* 78.3, (1915)*	75.4
Syrian Protestant College, Beirut, Syria	(1906)*	78

FAILED		
College	Year Grad.	Per Cent.
University of Havana, Cuba	(1921)*	67.2
University of Frankfort-on-the-Main, Germany	(1922)*	71.2
University of Budapest, Hungary	(1890)*	63.9
University of Naples, Italy	(1902)* 60.2, (1916)* 64.1, (1917)*	70.9
University of Odessa, Russia	(1910)*	71.7

* Graduation not verified.

Hawaii July Examination

Dr. G. C. Milnor, secretary, Hawaii Board of Medical Examiners, reports the written examination held at Honolulu, July 14-17, 1924. The examination covered 10 subjects and included 75 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 5 passed and 1 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
University of California Medical School	(1922)	84.8
Northwestern University	(1924)*	78
Rush Medical College	(1924, 2)* 82.5,	88.5
University of Louisville	(1911)	82

FAILED		
College	Year Grad.	Per Cent.
University of Pennsylvania	(1923)	70.6

* These candidates have completed their medical course, and will receive their M.D. degrees on completion of a year's internship in a hospital.

Social Medicine and Medical Economics

THE LEPROSY SITUATION IN THE UNITED STATES IN 1923

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The following is a brief survey of the leprosy situation in the United States as revealed by a letter of inquiry addressed to every state health officer, most of whom made prompt reply. In view of the want of very definite information on this subject, it seems worth while to make the data public. The establishment of the federal leprosarium at Carville, La., has brought about a profound change in the situation, the significance of which is as yet but partly realized. Opened in 1921, the total admissions to Oct. 1, 1924, have been 297. The details of this experience, as furnished by Surg. E. O. Denney, medical officer in charge, are given in Table 1.

TABLE 1.—*Cases at the Federal Leprosarium, Carville, La.*

Year	Admitted	Died	Discharged	Absconded
1921	136	11	6	18
1922	92	5	3	10
1923	19	14	0	7
1924*	50	6	3	4
Total	297	36	12	39

* To Oct. 1, 1924.

In the District of Columbia, there were two cases of leprosy during 1923, one patient being a colored woman, aged 21, while the other was an elderly man who had previously resided in the District of Columbia and was sent to the leprosarium at Carville. He made his escape from there and returned to Washington, but was detected and promptly sent back. At present there is not a case of leprosy in the District of Columbia.

No cases of leprosy occurred in the state of Colorado during 1923. There is a record of one case, a Mexican who has been in this country fourteen years, or seven in California and seven in Colorado. He is now living on a ranch in Merino. He has a family of five, all being well, as far as is known. One case was sent from Lincoln County, Colorado, to the federal leprosarium three years ago.

No cases of leprosy were officially reported by the Indiana State Board of Health during 1923. There are no known lepers in Indiana at present. A case of leprosy, however, occurred in the city of East Chicago. A former resident, a Mexican laborer, was discovered in June, 1924. The case was referred to the immigration authorities, as the patient was not a citizen of the United States. While the Immigration Department was preparing to investigate the matter the man escaped and, according to the best information, returned to Mexico.

A detailed report of the leprosy cases occurring in the state of California during 1923 is given in Table 2.

According to a census of California lepers, taken three years ago, there were at that time forty-two lepers in the state, of whom thirty-six were transferred to the federal leprosarium at Carville, including twenty-two residents of San Francisco, six from Alameda County and the remainder being from San Jose, Alviso, San Diego and Los Angeles.

In Minnesota, in which in former years leprosy formed an endemic center, two cases were reported during 1923, one from Trout Lake, Itasca County and one from Midway, St. Louis County. There are now four known lepers in this state, one in Freeborn County, two in Minneapolis and one in Faribault County. The report of the board of health also has on its list one cured leper who has been following the occupation of school teacher for a number of years, and one whose present whereabouts are unknown. There are at present six Minnesota lepers at the federal leprosarium, three from Minneapolis, transferred in 1922, and three from other parts of the state, transferred in 1924.

Reports for Oregon indicate that no cases occurred during 1923 and that there are no cases in the state. Two cases had been transferred previously to the federal leprosarium from Multnomah County and one from Coos County.

In Georgia no cases occurred during 1923, but two cases were reported during 1924, both of the patients being transferred to the federal leprosarium. One of these cases had its origin in Columbus and the other in Townsend.

In New York State, leprosy is not a reportable disease, and precise information therefore is not available. It is stated, however, that a case of leprosy was diagnosed as such in the town of Portville, Cattaraugus County, during 1923, and that this is the only case which has officially come to the attention of the state authorities. The patient in question is still a resident of the town of Portville, pending action by the federal government with reference to deportation.

In Maine, no cases of leprosy have occurred or are known to exist at present. It is pointed out in this connection that no cases of leprosy have occurred in this state for many years; this is somewhat strange, for there is a small leper colony in New Brunswick to the east, and there have been frequently occurring cases in some New England states to the south.

In Texas, eleven cases were reported for 1923: El Paso, two; Galveston, two; Hidalgo, two; Waller, two; Harris, two, and Liberty County, one. Seven cases were reported since Jan. 1, 1924, two of which were reported in Houston, two at Hidalgo, two at Galveston and one at Corpus Christi. Several of these lepers have been transferred to the federal leprosarium.

For Maryland, two cases of leprosy were reported in the city of Baltimore during 1923; one of the patients has been sent to the federal leprosarium.

No new cases of leprosy occurred in North Dakota during 1923, but there are two lepers known to the authorities. None have been transferred to the federal leprosarium.

The state board of health of Idaho reports that there were no cases of leprosy during 1923, and that none are known to be in the state.

TABLE 2.—*Leprosy in California*

Month	No. of Cases	Reported from
January	1	San Francisco
February	1	Sebastopol
	1	San Francisco
March	1	Los Angeles
	1	Fresno
April	1	Los Angeles
	1	Sacramento
May	1	San Francisco
	1	Oakland
	2	San Quentin
	1	San Jose
June	2	San Francisco
	1	Martinez
	1	Sacramento
July	1	Los Angeles
August	1	Los Angeles
October	1	San Francisco
	1	Sacramento
Total	20	

In Massachusetts, there was one case of leprosy reported during 1923 in the town of East Wareham, the patient being deported early in 1924. There are no known lepers in this state at present. In March, 1921, thirteen lepers were transferred from Penikese Island to the federal leprosarium, and another transfer of one case was made in 1921.

No case of leprosy has ever been known in Vermont.

No new cases have developed in Nevada during 1923, but information indicates that there is a case at present in Reno,

the patient being a native of the Philippine Islands, for whom arrangements are being made regarding his transfer to the federal leprosarium.

No cases of leprosy occurred in West Virginia or Wyoming, and none are known to the authorities at present.

No cases of leprosy occurred in Ohio, and none are known.

Replies to the same effect have been received from New Hampshire, Iowa and Delaware.

In Pennsylvania, during 1923, there were two cases of leprosy, one having been reported from Philadelphia and one from Shenandoah. The Shenandoah patient was an old Spanish woman who entered the United States some years ago and left to reenter in 1923. She was deported to Spain in July, 1924. At present there are in Pennsylvania the Philadelphia case referred to and one in Reading, discovered in July, 1924. The latter patient is a Greek woman, who has been in this country about eight years. Her history would indicate that she was in the early stages of the disease when she left her native country. No cases were transferred to the federal leprosarium during 1923.

No cases of leprosy occurred or are known at present in Connecticut.

No new cases of leprosy occurred in Montana during 1923, but one patient is quarantined in Mineral County. This is an old patient who has been under observation for a number of years.

No cases of leprosy occurred or are known at present in Missouri.

According to the state board of health of Kansas there were no cases of leprosy during 1923, but one case has been reported during 1924, from Kansas City. This patient was a Mexican, who was subsequently deported.

No cases of leprosy occurred in Michigan, nor are any cases known to be in the state at present.

No cases of leprosy were reported in Arkansas during 1923, but one leper is known to the authorities, who will in the course of time be transferred to the federal leprosarium in Carville. This case was reported to the authorities in 1922.

In Louisiana, during 1923, there were officially reported thirteen cases of leprosy, all new cases, exclusive of absconders. The location of these cases was: New Orleans, eight; Jefferson Parish, one; Acadia Parish, one; St. Tammany, two, and Lafourche Parish, one.

It is pointed out in this connection that of the 209 patients at the federal leprosarium, 103 are natives of Louisiana. Since Jan. 1, 1924, some forty-four patients have been admitted to the federal leprosarium, of whom twenty-one are from Louisiana. Of the thirteen reported, five have died, leaving eight who are still at Carville.

No cases of leprosy were reported for Wisconsin during 1923, but one case was reported in 1924 from La Crosse. The patient was transferred to the federal leprosarium during the year.

No cases of leprosy were reported from Alabama during 1923, but very recently a case has occurred in Colbert County, the patient being a girl, who has not yet been transferred to the federal leprosarium.

No cases of leprosy have occurred or are known at present in Tennessee and Oklahoma.

One case of leprosy was reported from Lincoln, Neb., during 1923, but no cases are known to be in the state at present. This patient was deported to Mexico in due time.

Arizona reported three cases of leprosy during the year 1923, two of the patients being Mexicans and one a Chinese. During 1924, two cases have been reported, one of the patients being a Mexican woman and one a German, aged 70. The latter is now under care of the county health officer of Santa Cruz County. There are no Arizona lepers at the federal leprosarium, and none have as yet been transferred to that institution.

No cases of leprosy occurred or are known to be present in South Dakota, North Carolina and Virginia.

No new cases of leprosy occurred in Utah during 1923, but a leper was reported at Salt Lake City during 1924, who in the course of time will be sent to the federal leprosarium. This patient was a Mexican who had lived at the present address for five years and in California for ten. He has been depending on charity for the last three years, having no family or others to support him.

No cases of leprosy were reported during 1923 and none are known to be present in New Mexico.

According to the state board of Illinois, one case of leprosy was reported from Chicago during 1923, and three lepers are known to be in Chicago. Two lepers were transferred in 1921, eleven in 1922 and none in 1923, to the federal leprosarium.

There were no known cases of leprosy reported in New Jersey during 1923, but one patient is known to be located in Atlantic City. Two lepers were transferred to the federal leprosarium, one from Phillipsburg, in 1920, and one from Newark, in 1922.

The foregoing summary emphasizes the great practical value of the federal leprosarium at Carville, where sporadic cases occurring from time to time in different parts of the country can be properly cared for with a fair hope of successful results.

The leper settlement at Louisiana was purchased by the federal government in 1921, and accommodations were increased from eighty beds to 173, all being immediately filled from the waiting list. Congress, by a special act, Feb. 20, 1923, appropriated $650,000 for additional space, which will increase the bed capacity to approximately 500. According to the Surgeon General of the Public Health Service, who referred to this matter in his report for 1923, "At the present time proper facilities are lacking to detain unwilling lepers, but the great majority of patients at Carville are contented and law-abiding citizens, with no wish to violate quarantine regulations and earnestly desiring to avoid exposing others to infection."

Only those who have thoroughly gone into the facts of the leprosy situation can appreciate the dreadful seriousness of a problem which is very far indeed from having been solved; but it is something considerably to the credit of the United States that it shares with other civilized countries the credit for having provided a home for the victims of leprosy, where they are no longer a menace to others, while being treated in accordance with the best methods known to medical science.

OPPOSITION TO VACCINATION IN OHIO

The efforts of health officials in Ohio to prevent an epidemic of virulent smallpox by vaccination has been confronted by organized opposition. The activities of groups of antivaccinationists became so pronounced, says the *Ohio State Medical Journal*, that many leading newspapers closed their columns to "such vindictive expletives" or took a strong editorial stand in favor of vaccination. Within the last month, the legal aspect of vaccination and the scope and authority of health and school boards to require vaccination have been determined by two court decisions and several official opinions. As a result of the court decision in Lakewood, the antivaccinationists have announced their intention of having an Ohio League for Medical Freedom, the purpose of which would be to amend and repeal all legislation requiring compulsory medication, vaccination, inoculation, examination, or treatment of any or all kinds. The Columbus *Dispatch* closed its "letter column" to antivaccinationists. The *Ohio State Journal* said: "Vaccination against smallpox is in no sense an experiment. Its efficacy has been proved again and again. So conclusive is the evidence that it is a pity that well meaning people persist in remaining in ignorance of it or in

deliberately closing their minds to it." The Marietta *Times* said: "Let critics argue, if they will, against injecting any kind of germs into the human system, but at least let them preserve their sanity regarding the service rendered to present day schools and through them to all society by the medical and nursing profession. To them, more than any other cause, is due the great improvement in community health in recent years and the great reduction in contagious and infectious disease."

Book Notices

DISEASES OF THE NOSE, THROAT AND EAR. For Practitioners and Students. Edited by A. Logan Turner, M.D., F.R.C.S., Surgeon-Consultant, Ear and Throat Department, Royal Infirmary. With the collaboration of J. S. Fraser, M.B., F.R.C.S., Surgeon to the Ear and Throat Department, Royal Infirmary; W. T. Gardiner, M.C., M.B., F.R.C.S., Aural Surgeon, Eye, Ear and Throat Infirmary; J. D. Lithgow, M.B., F.R.C.S., Surgeon to the Ear and Throat Department, Royal Infirmary; G. Ewart Martin, M.B., F.R.C.S., Assistant Surgeon, Ear and Throat Department, Royal Infirmary; and Douglas Guthrie, M.D., F.R.C.S., Surgeon to the Ear and Throat Department, Royal Hospital for Sick Children. Cloth. Price, $5.50. Pp. 413, with 234 illustrations. New York: William Wood & Co., 1924.

In this work the author has revised and elaborated on a previous textbook of diseases of the nose, throat and ear. The material is well organized, being divided into six sections, each one being edited by a specialist in that particular field. It is a clear, concise, readable and up-to-date book. The type is a trifle small, but the paper used is very good. The illustrations, of which twelve are in color, comprise anatomy, dissections, operations and schematic drawings. The operative technic for the more common ear, nose and throat conditions is taken up in considerable detail. Endoscopic technic, however is scarcely treated. On the whole, it is a delightful and very welcome book.

ARNOLD WATERLOW. A Life. By May Sinclair. Cloth. Price, $2.50. Pp. 446. New York: The Macmillan Company, 1924.

Of all of the British novelists, Miss May Sinclair has been most thoroughly wedded to the importance of psychanalysis in the comprehension of human motivation. The life of Arnold Waterlow is the study of a boy from birth to old age. Gradually, the author develops the influences working on his mental life that cause him to become altruistic and sacrificial in his character. His relations to his mother, his love for a woman who uses and abuses his adoration, his content to serve in situations that wear his soul in order that he may contribute to the lives of others are some of the high points in the character development. "Arnold Waterlow" is the most recent volume in a series of perspicacious studies of individuals coming from the pen of Miss Sinclair during recent years. "Mr. Waddington of Wyck" was the portrait of an egregious, self-important man who dominated his surroundings, although mentally below those whom he dominated. "The Life and Death of Harriet Frean" is an account of the life of a sex-starved old maid. "A Cure of Souls" is the story of a minister who lives parasitically on his community. "Mary Olivier" and "Ann Severn" included numerous analytic character studies. The physician will find May Sinclair's contributions almost authentic case histories, illuminating in their portraiture, and written in a fascinating literary style.

LEHRBUCH UND ATLAS DER RÖNTGENDIAGNOSTIK IN DER INNEREN MEDIZIN UND IHREN GRENZGEBIETEN. Herausgegeben von Franz M. Groedel. Halbband, 1 & 2. Lehmanns medizinische Atlanten, Band 7. Fourth edition. Cloth. Price, $13. Pp. 1109, with 1431 illustrations. Munich: J. F. Lehmanns, 1924.

The first volume, of about 640 pages, contains chapters on roentgen-ray physics, technic and foreign roentgen-ray apparatus, most of which is condensed, fortunately, because complicated technical roentgen-ray apparatus and accessories are of little interest to the average practitioner. By limiting the discussion to modern apparatus and accessories instead of including antiquated equipment, the author has eliminated the usual fault to be found with most books of this type. The chapters on the heart, chest, stomach and roentgenologic findings in the chests of children are given in considerable detail, yet not prolonged, and contain a vast amount of real information. It indicates a serious attempt on the part of the author and his associates to confine themselves to the subject. A large bibliography is appended at the end of each major subject. Since every major subject is handled by a specialist in that particular field of endeavor, each chapter is really a compilation and a summary of the entire subject, the world's literature being utilized as a guide. The second volume is carried out in the same manner as the first, and includes chapters on the gastro-intestinal tract, divided into the esophagus, stomach, intestine, pancreas, bile tracts and colon. In addition, this volume includes the urinary system and osseous system and a special chapter on diseases of children. An atlas is included within the cover, containing more than 700 excellent photographic reproductions covering practically every phase of roentgen-ray diagnosis. Excellent drawings are scattered throughout the text of both volumes. These reproductions, direct reduced photographs, are consistent with the good quality almost always found in German publications. The books are well bound and the text printed on good quality of paper. In short, the two volumes comprise an unusually good set of reference books, bringing the literature down to the present. They are well worthy of being placed in the library of every practitioner as well as the specialist in the field of roentgenology. It is to be hoped that an English translation will be forthcoming.

X-RAYS AND X-RAY APPARATUS. An Elementary Course. By John K. Robertson, Associate Professor of Physics, Queen's University. Cloth. Price, $3.50. Pp. 228, with 112 illustrations. New York: The Macmillan Company, 1924.

The physical principles underlying the use of the roentgen ray are set forth so simply that only elementary knowledge of physics is needed to follow the explanation. Beginning with definitions of the volt, the ampere, the rheostat and other terms used in the study of electricity, the student is made somewhat familiar with the physics of the interrupterless transformer and the induction coil. Then the origin of roentgen rays is presented, followed by an explanation of the gas bulb and the Coolidge tube. The nature and penetration of roentgen rays is next taken up. Certain practical problems, such as the measurement of wave length, secondary rays, dosage and deep therapy, are briefly discussed. The book will be of value to medical students and to any one working with roentgen rays who desires to understand the scientific principles underlying their production and application.

LEAVES FROM THE GOLDEN BOUGH. Culled by Lady Frazer. Cloth. Price, $3. Pp. 239, with illustrations. New York: The Macmillan Company, 1924.

"The Golden Bough," by Lord Frazer, is one of the classical volumes of mythology that should form a part of the education of every intelligent person. In the present collection, Lady Frazer has chosen stories from the larger book, which she believes will be of particular interest to the child. However, it is doubtful whether the book will be suitable for any child under high school age, because the very nature of the material is such as to require a considerable amount of fundamental education for a complete understanding. Of particular interest to the physician is the account of medical customs that indicate the growth of modern medicine from primitive magic. Probably the greatest value of this volume will be in its inducement to a certain number of readers to make a study of the complete book.

LANG'S GERMAN-ENGLISH DICTIONARY OF TERMS USED IN MEDICINE AND THE ALLIED SCIENCES. Edited and Revised by Milton K. Meyers, M.D., Neurologist to the Northern Liberties Hospital. Third edition. Cloth. Price, $7.00. Pp. 613. Philadelphia: P. Blakiston's Son & Co., 1924.

The previous edition of this book appeared in 1913. It was at that time the standard in its field. The present edition, edited and revised by Dr. Milton K. Meyers, incorporates some 4,000 new terms and includes approximately 53,000 definitions. This is a most valuable book for all who are confronted with the interpretation of German medical literature.

Medicolegal

Valid Ordinance as to Tent Cities or Tourist Camps

(Miller v. Quigg, Chief of Police (Fla.), 100 So. R. 270)

The Supreme Court of Florida, Division A, says that an ordinance of the city of Miami defines a "tent city" to mean "any structure or inclosure, the roof of which is of silk, cotton, canvas or light material, and which is used by one or more people as a human habitation," and "tent cities," to mean, "any lot or site on which are located two or more tents." The ordinance then provides that no tent or tent city shall be erected or maintained without a permit from the department of public welfare. Another section provides that tents or tent cities which are located on a street in which there is a public sewer shall be provided with water-closets which must be connected with such public sewer. In such cases there shall be one water-closet for each sex in the ratio of one for each sex for each five tents or portions thereof, and, in addition thereto, one slop sink for each five tents or portions thereof. In case a tent or tent city shall be located on a street in which there is no public sewer, dry toilets of a prescribed character must be provided, one dry toilet for every two tents. No tent shall be located more than 100 feet from the water-closet or dry toilet which serves such tent.

Petitioner Miller was found guilty of violating the ordinance by maintaining a tent city in the city of Miami without a permit to do so from the department of public welfare; by failing and refusing to provide a water-closet for each sex in the ratio of one for each sex for each five tents, and by failure to provide slop sinks for each five tents. He was sentenced to pay a fine of $100 or serve fifty days in jail. Failing to pay the fine, he was confined in the city jail, and sued out a writ of habeas corpus, but was not released thereon, judgment being for the defendant, which judgment is affirmed.

The petitioner contended that the city of Miami had no authority to pass the ordinance in question; but the supreme court holds that there was ample authority to enact the ordinance in the provisions of the charter of the city empowering it "to do all things whatsoever necessary or expedient for promoting or maintaining the general . . . health . . . of the city or its inhabitants," and "to provide for the preservation of the public health of the inhabitants of the city, make regulations to secure the same." During the winter or tourist season large numbers of persons flock to Florida, many of whom live in tents in localities known as tent cities, camping grounds, tourist camps, etc. A large number of people living in proximity in tents, without sanitary regulations, is very apt to produce sickness, and it was to promote and preserve the public health that the ordinance in question was enacted. It is a reasonable and valid exercise of the city's power to preserve and promote the public health.

Liability from Use of Drainage Tube Not Being Recorded—Adhesions

(Garrison v. Everett et al. (Neb.), 199 N. W. R. 30)

The Supreme Court of Nebraska says that an operation was performed on the plaintiff for a purulent appendix, and this action was afterward brought against the Sulpho-Saline Bath Company and the operating surgeon to recover damages occasioned by the alleged negligence of the surgeon in failing to secure a drainage tube so as to prevent its slipping into the wound and in failing to discover and remove the tube before allowing the wound to heal. A jury found in favor of the surgeon, and against the corporation in the sum of $6,500; and a judgment in accordance therewith is affirmed.

It was contended that the inconvenience suffered by the plaintiff was due entirely to the formation of adhesions, which did not come from the tube, but were a natural result of the infected appendix. However, that contention could not be sustained; at least it was a question for the jury. The court thinks that the evidence made a question for the jury and afforded sufficient ground for the inference that with proper drainage a normal recovery would have resulted, but that the failure to provide proper drainage after the operation and permitting the wound to heal without removing the tube were the proximate cause of the plaintiff's subsequent ill health.

Another contention was that the verdict was inconsistent on the theory that the liability of the corporation depended entirely and exclusively on the alleged negligence of the operating surgeon. It was true that on the trial the plaintiff's principal reliance was on the alleged negligence of that surgeon, and if the only negligence charged was that of that surgeon, the inconsistency of the verdict was beyond dispute. When the liability of the principal depends entirely on the negligence of the named agent or employee, a verdict in favor of the employee and against the principal cannot be sustained. But the allegations of the plaintiff's petition were sufficiently broad to let in evidence of negligence of other servants of the defendant corporation. Then, it appeared from the evidence that a daily record was kept of the condition of the patient, and when a drainage tube was inserted in the wound that fact was reported to the nurse in charge, whose duty it was to enter the fact on the chart or report; that the operating surgeon in this case instructed the nurse to record the fact of the insertion of the tube, but the nurse failed to make the record, with the result that when the operating surgeon's surgical assistant, who was an employee of the defendant corporation and the physician in charge of the case after the operation, dressed the wound the following day and subsequently, he received no information from the chart or otherwise that a tube had been inserted, and did not discover its presence, but dressed the wound, and about eight days later removed the stitches, allowing the wound to heal. This evidence of negligence on the part of the nurse employed by the defendant was sufficient to sustain a finding against the defendant corporation. If the chart had shown the insertion of the tube, the surgical assistant, who testified that he worked from the chart, would in all probability have noticed its absence and taken proper steps to recover it and place it in proper position to perform its function.

Again, the court says that the evidence was conflicting as to whether or not the presence of the rubber tube, which appeared to have lodged between the abdominal wall and the exterior covering of the body, would tend to cause the formation of pus or inflammation causing adhesions. But the undisputed evidence was that the case was one of pus appendix, requiring artificial drainage, and the slipping of the tube inside and healing of the wound prevented proper drainage, so that two months after the operation, when the presence of the tube was discovered and it was extracted, a quantity of serum was expelled from the wound; and it was fairly deducible from the evidence that such a condition would cause inflammation inducing the occurrence of adhesions. This was a question for the jury.

Society Proceedings

COMING MEETINGS

American Pathological Society, Washington, D. C., Dec. 29-31. Dr. E. B. Krumbhaar, Chestnut Hill, Philadelphia, Secretary.

American Pharmacological Society, Washington, D. C., Dec. 29-31. Dr. E. D. Brown, University of Minnesota, Minneapolis, Secretary.

American Physiological Society, Washington, D. C., Dec. 30-Jan. 1. Dr. Charles W. Greene, University of Missouri, Columbia, Mo., Secretary.

American Society of Biological Chemistry, Washington, D. C., Dec. 29-31. Dr. Victor C. Myers, New York Post-Graduate Medical School, New York, Secretary.

District of Columbia, Medical Society of, Washington, Dec. 3. Dr. C. B. Conklin, Medical Science Building, Washington, Secretary.

Federation of American Societies for Experimental Biology, Washington, D. C., Dec. 29-31. Dr. E. B. Krumbhaar, Chestnut Hill, Philadelphia, Secretary.

Philippine Islands Medical Association, Manila, Dec. 18-20. Dr. I. Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, San Juan, Dec. 13-14. Dr. Ramon M. Suarez, Santurce, Secretary.

Radiological Society of North America, Kansas City, Mo., Dec. 8-12. Dr. M. J. Sandborn, 844 College Ave., Appleton, Wis., Secretary.

Society of American Bacteriologists, Washington, D. C., Dec. 29-31. Dr. J. M. Sherman, Dairy Industry Building, Ithaca, N. Y., Secretary.

Southern Medical Association, New Orleans, La., Nov. 24-27. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Charleston, S. C., Dec. 9-11. Dr. H. A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.

Western Surgical Association, French Lick Springs, Dec. 4-6. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Review of Tuberculosis, Baltimore

10: 1-116 (Sept.) 1924

*Extrapleural Thoracoplasty in Treatment of Pulmonary Tuberculosis. W. H. Thearle, Denver.—p. 1.
*Treatment of Pulmonary Tuberculosis by Thoracoplastic Collapse. A. V. S. Lambert and J. A. Miller, New York.—p. 9.
Treatment of Pulmonary Tuberculosis. E. E. Watson, Salem, Va.—p. 20.
*Total Paralysis of Hemidiaphragm for Early Pulmonary Tuberculosis. J. Alexander, Ann Arbor, Mich.—p. 27.
*Ligation of Pulmonary Artery Combined with Resection of Phrenic Nerve in Chronic Inflammatory Conditions, Especially Tuberculosis of One Lung. K. Schlaepfer, Baltimore.—p. 35.
Thoracoscope in Pulmonary Diagnosis. J. J. Singer, St. Louis.—p. 67.
*Electrocautery in Treatment of Laryngeal and Pharyngeal Tuberculosis. J. B. Greene, Asheville, N. C.—p. 73.
*Wildbolz Auto-Urine Reaction. J. J. Enright and L. F. Rettger, New Haven, Conn.—p. 78.

Extrapleural Thoracoplasty in Treatment of Pulmonary Tuberculosis.—Thearle has performed an extrapleural thoracoplasty on thirteen patients with pulmonary tuberculosis. The chief involvement was on the left side in eight, and on the right in five cases. The patients were considered, at the time of the operation, to be in good condition in three cases, in fair condition in four, and in poor condition in six. Two patients died from operation (one from pulmonary hemorrhage with asphyxiation, and the other from paralytic ileus). Two patients are unimproved, due to amyloid visceral changes and intestinal tuberculosis, which appeared soon after operation. They were both in poor condition and it was questionable at the time of operation as to whether amyloid disease was present and really did not meet the operative indications. Six are markedly improved, but two of these were pyopneumothoraces and require further surgical collapse to obliterate small remaining cavities, which it is hoped will eventually result in their classification as cures. One case was slightly improved and two cases are classed as practical cures.

Thoracoplastic Collapse for Pulmonary Tuberculosis.—Lambert and Miller believe that the judicious use of thoracoplasty will not only restore many hopeless invalids to economic independence but it is a public health measure of importance by rendering sputum-free a class of patients who are often a real menace to their associates. The present mortality of approximately 25 per cent. may probably be reduced in the future by better operative technic and more skilful selection of cases.

Paralysis of Hemidiaphragm for Pulmonary Tuberculosis.—Alexander says that the decidedly favorable influence of the pulmonary rest and relaxation caused by complete paralysis of half the diaphragm in advanced tuberculosis strongly supports the suggestion that radical phrenicotomy, in conjunction with usual careful hygienic regimen, would offer to patients with predominately unilateral early tuberculosis, who are not making satisfactory progress under the hygienic regimen alone, a greater chance of early and permanent clinical cure than any other known method of treatment.

Ligation of Pulmonary Artery and Resection of Phrenic Nerve.—Clinical experience and experimental findings, have convinced Schlaepfer that ligation of the pulmonary artery, combined with resection of the phrenic nerve, is a method which promises an enlargement of the indications for a rational surgical procedure in advanced unilateral tuberculosis, in cases either benefited by methods now used after a great length of time or not improved at all, and so facing a dark prospect. Other chronic inflammatory conditions of the lung, such as abscess, bronchiestasis, anthrax and even new growths in their early stages, might be treated with a much brighter prospect of cure than hitherto. In an early stage the diseased organ might be put at complete rest by ligation of the pulmonary artery combined with resection of the phrenic nerve. The intact side takes over the whole respiratory function. A fibrosis occurs on the ligated side around the diseased area, in addition to the natural fibrous envelop present in all these conditions. Thus well prepared, the diseased organ might be extirpated in a subsequent operation with a much better outlook than when undertaken in a one-stage operation.

Electrocautery in Treatment of Laryngeal Tuberculosis.—In the very early lesions of the larynx, characterized by simple hyperemia and not causing pain, Greene depends largely on vocal rest to secure an arrest, or perhaps a cure of the condition. In the late stage of the disease, evidenced by extensive infiltrations and ulcerations of the larynx, particularly if the general condition of the patient is bad, the cautery should be resorted to only for the relief of pain. Tuberculous infiltrations or ulcerations when localized on the vocal cords or ventricular bands respond well when lightly touched with the cautery point. Tuberculous infiltrations and granulations, occurring in the posterior commissure, which are so frequently associated with hoarseness or aphonia, respond well to the action of the cautery.

Wildbolz Auto-Urine Reaction.—Enright and Rettger are of the opinion that the Wildbolz auto-urine test gives much promise of becoming a valuable laboratory aid in the diagnosis of clinical tuberculosis, if the nonspecific reacting elements of concentrated urines are removed.

Annals of Clinical Medicine, Baltimore

3: 171-254 (Sept.) 1924

Hospital Associations and Similar Groups. W. P. Elmer, St. Louis.—p. 177.
Gynecologic Diseases of Interest to Internist. H. S. Crossen, St. Louis.—p. 180.
Ophthalmic Medicine. E. V. L. Brown, Chicago.—p. 183.
*Subacute Bacterial Endocarditis: Streptococcus Viridans Type. L. H. Behrens, St. Louis.—p. 188.
*Streptococcus Viridans Infection. G. Ives, St. Louis.—p. 192.
*Tachycardia Result of Digitalis Administration. D. Luten, St. Louis.—p. 194.
Juvenile Adiposity. W. Engelbach, St. Louis.—p. 198.
*Physiologic Basis of Rest in Pulmonary Tuberculosis. F. M. Pottenger, Monrovia, Calif.—p. 209.
Focal Infection. C. H. Neilson, St. Louis.—p. 217.
Treatment of Gonorrheal Rheumatism. R. Kinsella, St. Louis.—p. 220.
Chronic Arthritis. R. Pemberton, Philadelphia.—p. 225.
*Chronic Diseases of Respiratory Tract. L. Clendening, Kansas City, Mo.—p. 230.
Bronchial Asthma. C. H. Eyermann, St. Louis.—p. 239.
Restoration of Function of Mouth. V. P. Blair, St. Louis.—p. 242.
Radium and Internal Medicine E. Fischel, St. Louis.—p. 245.

Subacute Streptococcus Endocarditis.—Behrens reports seventeen cases of subacute bacterial endocarditis in which *Streptococcus viridans* was the exciting cause. In all cases, the patients died. Treatment was futile. All the arsenicals, quinin hydrochlorid, salicylates, mercurials, vaccines and blood transfusions failed to save life. The history in the majority of these cases began with a throat infection; one with a prostatic infection, the others, indefinite. All the patients had chronic heart lesions.

Streptococcus Endocarditis.—Ives has isolated *Streptococcus viridans* in forty cases of endocarditis, in each case in the first culture. He emphasizes the point that the streptococcus is rarely absent from the blood in this disease. In his opinion the reported bacteria-free cases frequently represent faulty laboratory technic.

Mode of Action of Digitalis.—Digitalis slows the ventricular rate when this is rapid as a result of auricular fibrillation, and it does so by depressing the conductivity of the auriculo-ventricular connecting tissues. But does it slow the rate of a rapid ventricle when the auricle is contracting normally? Luten is convinced that digitalis does not slow the pulse, through any direct action, in patients with normal cardiac mechanism. The improvement from digitalis in patients with normal cardiac mechanism occurs independently of any change in ventricular rate. Digitalis cannot be expected, through any direct action, to slow the rate of a normally beating adult heart. Digitalis, in excessive dosage, may produce ventricular acceleration in patients with normal mechanism and also in patients with auricular fibrillation. When a patient who is receiving digitalis in adequate amounts

exhibits a definite acceleration in ventricular rate, the drug should be stopped.

Rest in Pulmonary Tuberculosis.—Pottenger asserts that unwarranted exercise has been the immediate cause of hastening death more often and the actual cause of more deaths from tuberculosis than any other single factor. The degree of exercise which is permissible varies with different clinical forms of the disease and the physical state of the individual. The amount of exercise permissible is that which is always within the physiologic demands of the patient. Some individuals can exercise and still get well. They can maintain a physiologic equilibrium sufficient to overcome the disease, regardless of the amount of exercise that they take. A patient can get well quickest, however, if he will keep the amount of exercise within his balance of energy formation. While rest is essential during the active stage of the disease, exercise is just as essential when activity is passed. After the period of activity is passed, if there are no other contraindications, the patient's muscle tone should be built up and his general strength increased to as high a degree of efficiency as possible. The patient who is kept at bed rest during the period of active tuberculosis should have his physical powers raised to such a point that he can walk four or five miles a day without tiring after the disease becomes quiescent, and before he is considered fit to relinquish close medical supervision.

Nasal Disease and Respiratory Disease.—Clendening believes that it is not sufficiently recognized or at least not sufficiently emphasized by the profession, that there is a pulmonary route of senescence and exitus, which, while not as frequent as the usually emphasized routes of cardiac, vascular and renal failure, is sufficiently common to justify consideration. The idea of the connection between nasal disease and respiratory disease is not new, but it has not received a large amount of comment. Sinus disease, infection of the ethmoid cells and disease of the tonsils may be responsible. The infection of the bronchial mucosa and of the bronchio-atrial vestibules is a process of long duration. The patients while young and early in the process of the disease are likely to complain, if they complain at all, of nothing except a succession of colds during the winter season and of easy susceptibility to chest colds. Later, however, this bronchitis and bronchorrhea may be continuous in the winter time and still later it may exist all the year round. In a later stage occurring when the resiliency of the tissues has diminished, in the fifth and sixth decades of life, the walls of the terminal bronchioli become infiltrated, their walls are stretched, and their walls, and the walls of the atria and the adjacent alveoli break down, forming pockets of pus with the familiar clinical picture of chronic bronchiectasis. Later emphysema and myocardial failure set in. The importance of the recognition of this chain of events is that prevention can, in a large number of cases, be gained by the eradication of the nasal disease. This, however, must be done before the beginning of degenerative changes in the walls of the bronchi, or it will not be successful.

Archives of Surgery, Chicago

9: 485-688 (Nov.) 1924. Part I

*Diseases of Circulation of Extremities: New Method of Examination. B. Brooks and F. A. Jostes, St. Louis.—p. 485.
*Brodie's Abscess. M. S. Henderson and H. E. Simon, Rochester, Minn.—p. 504.
*Use of Free Transplants of Fascia as Living Sutures in Herniotomy. W. E. Gallie and A. B. LeMesurier, Toronto, Canada.—p. 516.
*Aseptic Intestinal Anastomosis. II. W. C. Burket, Evanston, Ill.—p. 530.
*Echinococcus Cyst in Scapular Area. M. Joannides and W. A. Riley, Minneapolis.—p. 537.
*Sarcoma of Bone. C. J. MacGuire and J. E. McWhorter, New York.—p. 545.
*Pathology of Fat Embolism. H. Gauss, Denver.—p. 593.
*Uterus Didelphys with Torsion of Pregnant Right Uterus. H. W. Horn, Wichita, Kan.—p. 606.
*Muscle Tears. A. Gottlieb, Los Angeles.—p. 613.
*Myositis Ossificans Following Horseback Injuries to Thigh. A. Bowen, Baltimore.—p. 619.
*Primary Multiple Endothelioma of Bone. A. Kolodny, Chicago.—p. 636.
*Absence of Sacrum. S. F. Stewart, Los Angeles.—p. 647.
Review of Urologic Surgery. E. S. Judd, A. J. Scholl, L. D. Keyser and G. S. Foulds, Rochester, Minn.—p. 653.

Diseases of Circulation of Extremities.—The method of study used by Brooks and Jostes, is one by which the temperature of the tissues and the changes in such temperature have been measured by means of the thermocouple galvanometer method. From the results obtained in thirty-seven examinations of eighteen individuals, it would seem that the study of the temperature changes in the tissues resulting from alternate obstruction and release of the obstruction of the arterial circulation gives valuable information as to arterial diseases. Obviously, the temperature of the distal tissues of a normal extremity will fall if the circulation of blood is completely obstructed, and will rise if the obstruction is removed, assuming the extremity is exposed to ordinary room temperature. In all persons examined, whose arteries were presumably normal, the temperature of the distal tissues fell during the period the arterial circulation was obstructed and rose immediately after the removal of the obstruction to approximately its former level. In all persons examined, whose arteries were known to be obstructed by disease, the temperature of the distal tissues fell during the period the arterial circulation was obstructed, but did not begin to rise immediately after the release of the obstruction. In all instances, the fall in temperature of the distal tissues continued for a period of from two to seven minutes after the removal of the obstruction. In one instance of very marked arterial disease, no rise in temperature was observed. The length of time elapsing between the removal of the tourniquet and the beginning of the rise in temperature of the distal tissues seems to be an index of the magnitude of obstruction of the large arteries. Another factor to be considered is the rapidity of the rise of temperature after it has once begun. In all instances of presumably normal circulation, the rise has been rapid, the temperature rising as much as from 1 to 3 degrees per minute. In most instances in which the arteries have been known to be diseased the rise has been less rapid. In one instance in which disease of the large arteries was known to be present, the rise was relatively rapid following a relatively long period of delay. In another instance, in which there was no demonstrable disease of the large arteries, the rise was relatively slow, and there was only a very short period of delay. This patient was very much emaciated and was suffering from severe diabetes and advanced pulmonary tuberculosis. It would seem, therefore, as if the rapidity of the rise of temperature might be an index of the condition of the circulation in tissues in a sense independent of the condition of the main arteries of the extremity. In the case of patients receiving repeated examinations the curves obtained have been similar. Thus, it would seem as if the form of the curve obtained was characteristic of the condition existing. If there is a continued fall of temperature in the distal tissues after the tourniquet is removed, obstruction of the large arteries exists. The significance of the rate of rapidity in the rise in temperature after it has once begun is not now clear. Further study will be necessary to differentiate the significance of these two factors.

Brodie's Abscess.—It has been shown fairly conclusively that in cases of Brodie's abscess the staphylococcus is usually the infecting organism. *Bacillus typhosus* on rare occasions has been found in the abscess. In the thirteen cases cited by Henderson and Simon the staphylococcus was found in three cases; examination for organisms was negative in five cases, and no such examination was recorded in five cases. In five cases, a special search was made by microscopic examination and animal inoculation for evidence of tuberculosis, with negative results. Evidence of pulmonary tuberculosis was found in only one case, in which inactive tuberculosis of both upper lobes was demonstrated by the roentgen ray. Clinically, the chest findings were negative, and guinea-pigs inoculated with the material from the abscess gave negative results.

Fascia Transplants as Living Sutures.—From clinical experience, and from the information derived from experiments Gallie and LeMesurier have come to the conclusion that operations designed to produce permanent adhesion between aponeurotic structures having a natural tendency to separate are defective in principle, if they depend solely on the process of healing in the line of suture. Herein lies the explanation of the high percentage of recurrences in cases of large ventral hernias and in direct inguinal hernias, even

when the operations have been performed by most competent operators. The authors have devised a method of using transplants of fascia lata as living sutures, which permanently hold the edges of hernial rings together without depending on the natural process of repair. The details of procedure are given.

Aseptic Intestinal Anastomosis.—Burket describes an aseptic method of end-to-end intestinal anastomosis by the invagination of the ligated blind ends of the intestines to form digestible boli, release of which reestablishes the continuity of the intestinal lumen. The method was developed to eliminate the objectionable use of any special instrument or mechanical device which must either be withdrawan through the line of suture before the final closure or passed out of the intestines by peristalsis or otherwise.

Echinococcus Cyst Over Scapula.—The location of the cyst over the left scapula, in the case cited by Joannides and Riley was unusual. It is considered to be strong evidence that the infection may be carried through the general circulation to various parts of the body.

Sarcoma of Bone.—MacGuire and McWhorter review the difficulties that surround the accurate study of these bone neoplasms, particularly those relating to their diagnosis, prognosis, surgical treatment and classification. Theirs were cases of osteogenic sarcoma, giant cell tumor and Ewing's tumor (probably endothelioma).

Pathology of Fat Embolism.—Gauss reports on the results of his study of the pathology of fat embolism made to determine the pathologic basis for the delirium and subsequent coma that sometimes follow fractures, particularly fractures of long bones. Previous studies showed that every part of the central nervous system, from the cerebral cortex down to the peripheral nerves containing capillaries, was plugged with emboli; edema, congestion, petechial hemorrhages, small areas of round cell infiltration, degeneration of ganglionic cells, where such cells were present, and multiple small areas of focal necrosis, within which there was a destruction of the myelin sheaths and neurofibrils. Examining the conduction pathways of the central nervous system, selecting representative ascending and descending tracts, and inquiring into the influence exerted by these anatomic alterations on the functional activity of both these systems, it becomes evident that there is a marked interference with the passage of both afferent and efferent normal impulse. There is produced by the pathologic state an initiation of an avalanche of psychomotor and psychosensory impulses causing marked clinical manifestations and ultimately leading to a complete disorganization of the central nervous system. Not only is every conduction pathway of the central nervous system involved, but the sensory postcentral gyrus and motor precentral gyrus, the motor speech area in Broca's convolution, the auditory temporal area as well as the several association areas are all found to contain fat emboli plugging the blood capillaries and impinging against the adjacent nerve tissue, and all are accompanied by secondary degenerative changes. It is a fact of physiology that stimulation of either the sensory cortical area of the brain or any of its conduction paths initiates a psychosensory impulse, and that stimulation of the motor cortical area of the brain or any of its conduction paths initiates a psychomotor impulse. In fat embolism, myriads of small emboli enter the central nervous system and impinge against the adjacent nerve tissue from which they are separated only by a thin endothelial wall and so mechanically initiate stimuli giving rise to psychomotor and psychosensory impulses. Myriads of these impulses are initiated, for no apparent reason and without coordination of any kind; the clinical result is delirium. At first, these emboli mechanically irritate the adjacent nerve tissue, but soon they cut off the blood supply and interfere with the nutrition of the cell. Later, as the secondary changes of edema, hemorrhage and focal necrosis appear, these nerve cells and their axones undergo necrosis and finally death; thus is instituted a disorganization of the central nervous system leading to its complete functional collapse. This law is a reversal of the law of evolution. According to the law of dissolution, the highest nervous processes, since they are the latest to form and consequently the least organized, are the first to disappear in a manner similar to the operation of anesthesia; the lowest nervous processes, since they are the longest and most completely organized, are the last to disappear. Coma is a late manifestation of the law of dissolution, which is set in motion in this condition by the complete disorganization of the central nervous system as a result of the multiple areas of focal necrosis.

Uterus Didelphys with Torsion.—Torsion of the gravid side of a uterus didelphys is extremely unusual, and in the case recorded by Horn, there was no history of any exciting or predisposing cause.

Muscle Tears.—Gottlieb says that the diagnosis of muscle tears should be established from the history with full understanding of the manner of force and mechanism responsible for the production of the injury. The clinical findings must be the logical sequels of the history of the injury and the patient's complaints. Treatment should be conservative with physical measures and early motion, which may be only partially limited if the pain on motion is excessive. Operative procedures should be considered only after thorough conservative attempts have failed.

Myositis Ossificans Following Horseback Riding.—Myositis ossificans and riders' bone following horseback injuries, Bowen says, are not common among mounted troops. The etiology is not absolutely determined. It is probable that both a diathesis and an exciting cause are necessary to its production. The principal problem in diagnosis is to rule out sarcoma and not to treat this benign lesion as malignant. A good roentgenogram will usually enable the diagnosis to be made. When in doubt, an exploratory excision for diagnosis is permissible. Conservative treatment, without operation unless function is interfered with and then only after all growth has ceased, is the rule.

Primary Multiple Endothelioma of Bone.—In the three cases of primary endothelioma of bone which have been studied roentgenologically, Ewing's, Phemister's and the author's case, there was a definite bone production. In Kolodny's case the tracing of the tumor cells to the endothelium of the blood vessels is possible. The intimate attachment of rows of tumor cells (tubules) to the surrounding stroma is noticeable. Apart from the apparent giant cells, true giant cells are to be found containing two or more nuclei. The location of the tumors does not indicate metastatic carcinoma.

Absence of Sacrum.—Stewart reports a case and reviews the literature. Only six cases of absence of the sacrum have been found recorded or referred to after a thorough search of the literature.

9: 689-879 (Nov.) 1924. Part II

*Surgical Treatment of Mitral Stenosis. E. C. Cutler, S. A. Levine and C. S. Beck, Boston.—p. 689.
*Experimental Studies in Arteriovenous Fistulas. I. Blood Volume Variations. E. Holman, Boston.—p. 822.
*Id. II. Pulse and Blood Pressure Variations. E. Holman, Boston, and A. C. Kolls, Baltimore.—p. 837.
*Id. III. Cardiac Dilation and Blood Vessel Changes. E. Holman, Boston.—p. 856.

Surgical Treatment of Mitral Stenosis.—The surgical treatment of mitral stenosis is discussed at great length by Cutler, Levine and Beck. They review the rationale for operative intervention, the diagnosis of mitral stenosis, and the selection of cases for possible surgical treatment. The history of cardiac and pulmonary surgery, and development of apparatus for mechanical respiration are reviewed. Physiologic methods for producing lesions in the valves of the heart, and experimental surgery of the valves of the heart are presented. The data on early experiments are given also. Experimental data with description of a new method by the authors are detailed. The authors are of the opinion that there are cases of mitral stenosis in which the mechanical obstruction plays the dominant rôle. The diagnosis of this affection is made on the physical findings, and particularly on the palpation of a diastolic thrill at the apex; on the existence of a characteristic diastolic murmur (except in some cases of fibrillation); on the indirect electrocardiographic evidence of right ventricular preponderance and changes in the auricular com-

plex (P wave), and on the roentgenologic findings of an increased prominence in the region of the left auricle. On the basis of the importance of the factor of mechanical obstruction, and because of the experimental evidence of the improvement in blood pressures within the chambers of the heart with the reduction of an artificially created stenosis, operative intervention in such cases seems indicated. Experimental data are presented corroborating the results obtained by previous investigators, that in animals sectioning of the mitral valve can be performed by various methods with a high degree of assurance that each attempt will be successful and without great risk to the animal. Several of such methods, as well as the development of a new instrument capable of cutting a fibrosed and even calcareous mitral orifice, are described in full, with the protocols of illustrative experiments. In a discussion of the various operative methods reasons are given for favoring the apex of the left ventricle as the place of choice for the insertion of the instrument to be used in reducing the stenosis. Moreover, an instrument well suited to this task is the cardiovalvulotome described in this communication. The operative technic for performing partial valvulectomy in man for mitral stenosis is described. Four cases of mitral stenosis, in which an attempt was made to relieve the obstruction, are cited in full. The first patient is living and apparently improved one year after the operation. The other three cases survived the operation ten hours, twenty hours and six days, respectively. In one of these latter cases, an undiagnosed adherent pericardium complicated the picture and was a direct factor in the fatality. In the last case, death was due to bilateral, postoperative bronchopneumonia. The cardiovalvulotome was used only in the last case, when it actually excised a segment from the stenosed valve and made possible a greater flow of blood from auricle to ventricle.

Blood Volume Variations in Arteriovenous Fistula.—Holman presents further evidence that the various cardiac and circulatory phenomena encountered in arteriovenous fistula can be explained on physiologic grounds. The magnitude of the bruit, and the intensity of the thrill in arteriovenous fistula depend on the size of the fistula and the free return flow of blood to the heart. Both phenomena disappear on simple closure of the vein proximal to the fistula even though blood continues to pour through it toward the periphery. The thrill is ascribed to the vibration of the septum between artery and vein produced by the eddying blood as it sweeps under high pressure from the arterial into the venous systems. The production of a fistula introduces a large factor of inefficiency into the circulatory system, particularly with reference to the maintenance of blood pressure. The two systems, A, heart-artery-capillary bed-vein, and B, heart-artery-fistula vein, must be adequately supplied with a circulating medium, or the blood pressure will fall below a level compatible with life. The compensatory adjustment that follows the introduction of a fistula is according to the experimental evidence here presented, an increase in total blood volume, the increase depending on the size of the fistula and its duration.

Pulse and Blood Pressure Variations in Arteriovenous Fistula.—According to Holman, the opening of an arteriovenous fistula causes an acceleration of the pulse rate, and a fall in blood pressure. Closure of a fistula retards the pulse rate and increases blood pressure. The latter changes are slight at first but gradually increase; they are dependent on the dilatation of the vessels leading to the fistula, which in turn is dependent on the size of the fistula and the amount of blood short-circuited through the fistula. Small fistulas may show regressive changes; larger fistulas produce progressive changes in retardation of pulse and increased blood pressure, the progress of the changes developing, presumably, *pari passu* with the increasing blood volume, which, in turn, produces a dilatation of the heart-artery-fistula-vein system. The fall in blood pressure on opening an arteriovenous fistula affects both systolic and diastolic levels. The compensatory adjustment following the introduction of a fistula, mainly an increasing blood volume, results in a complete recovery of systolic pressure, sometimes in excess of that present before the production of the fistula. There is, however, only a slight recovery of the diastolic level and this remains permanently lowered in the presence of a fistula, thus producing a very distinct increase in pulse pressure. Excision of the fistula results in a temporary excessive increase in both systolic and diastolic levels, with a gradual adjustment to normal levels, and a distinct decrease in pulse pressure to a normal figure, these changes being due to a gradually decreasing total blood volume. There is an increase in venous pressure in the vein proximal to an arteriovenous fistula. This increased venous pressure need not necessarily produce an increase in peripheral venous pressure in the presence of a well functioning, unimpaired heart muscle, which reacts to this increased venous filling by an acceleration of heart action. In the presence of a large fistula between large vessels, there is a permanent increase in pulse rate to take care of the increased venous filling.

Experimental Studies of Arteriovenous Fistulas.—In summarizing the experimental evidence presented in these papers, the following points are emphasized by Holman: The production of an arteriovenous fistula establishes two systems of circulating blood: A, the heart-artery-capillary bed-vein system, and B, the heart-artery-fistula vein system. The short-circuiting of a volume of blood through system B, with its greatly reduced peripheral resistance, introduces a large factor of inefficiency into the circulatory system with particular reference to blood pressure. The variable factors concerned in the maintenance of blood pressure are: (1) cardiac output; (2) total volume of circulating blood; (3) capacity of system; (4) peripheral resistance. The lowered peripheral resistance in the presence of a fistula is compensated by changes in the remaining three variable factors, and in this way only is an adequate blood pressure level maintained. The volume of blood diverted and short-circuited through the lowered resistance of the fistula depends entirely on the size of the fistula, and the absence of any obstruction in the venous return flow to the heart proximal to the fistula. A small communication produces only slight changes, and these may not be detectable. With our present instruments of precision the slight alterations necessary to compensate for a small leak are not demonstrable, nor do they produce any visible visceral changes. A slightly larger fistula may result in changes, only some of which are demonstrable. A fistula larger in size than the feeding artery, or large enough to divert a considerable flow back to the heart, invariably produces demonstrable changes, both immediate and remote. That these changes to a greater or lesser degree occur in the presence of every fistula, no matter what the size, seems beyond question, the extent in each case depending entirely on the volume of blood diverted through the fistula. The immediate changes due to the production of a fistula and the immediate changes subsequent to the closure of a fistula by compression or by excision are detailed by Holman.

Journal of Infectious Diseases, Chicago

35: 315-406 (Oct.) 1924

Is Ability to Utilize Citrate Readily Acquired or Lost by the Colon-Aerogenes Group? S. A. Koser, Urbana, Ill.—p. 315.
*Respiratory Diseases. XVIII. Relative Reliability of Throat Swabs for Isolating Causative Pneumococcus Type. F. B. Kelly and H. Gussin, Chicago.—p. 323.
Id. XIX. Untreated Bile as Solvent for Pneumococci. F. B. Kelley and H. Gussin, Chicago.—p. 327.
*Effect of Suprarenalectomy in Rats on Agglutinin Formation. H. L. Jaffe and D. Marine, New York.—p. 334.
Bacterial Hybrids. E. Almquist, Stockholm, Sweden.—p. 341.
Toxico-Immunologic and Serologic Relationship of B. Botulinus, Type C, and B. Parabotulinus, "Seddon." XXII. W. Pfenninger, San Francisco.—p. 347.
Biochemical Activities of B. Botulinus, Type C, and B. Parabotulinus, "Seddon." XXIII. E. Wagner, San Francisco.—p. 353.
*Effect of Direct Sunlight, Diffuse Daylight and Heat on Potency of Botulinus Toxin in Culture Mediums and Vegetable Products. XXIV. P. Schoenholz and K. F. Meyer, San Francisco.—p. 361.
Formation of Peroxid by Actinomyces Necrophorus on Exposure to Air in Relation to Anaerobic Plate Cultures. W. A. Hagan, Ithaca, N. Y. —p. 390.
*Lytic Principle (Bacteriophage) for Corynebacterium Diphtheriae. J. E. Blair.—p. 401.

Reliability of Throat Swabs for Pneumococcus Typing.—Throat swabs were found by Kelly and Gussin to be reliable for the determination of the type of the causative pneumo-

coccus organism. Contamination with saliva from the mouth seemed not to interfere in the determination of the type of the causative pneumococcus.

Effect of Suprarenalectomy on Agglutinin Formation.—It was noted by Jaffe and Marine that rats surviving, in good condition, removal of both suprarenal glands develop higher agglutinin titers than their controls if immunized with typhoid vaccine within three weeks after operation. The most striking difference in response is obtained when the rats are immunized with small amounts of vaccine during the second week after suprarenalectomy. They then develop titers from two to three times as high as their controls. After the third week, the difference in the agglutinin response between immunized suprarenalectomized and control rats begins to diminish, and after the sixth week the authors were unable to demonstrate any difference in this respect between the control and suprarenalectomized rats.

Effect of Heat on Botulinus Toxin.—The outstanding finding of clinical importance made by Schoenholz and Meyer is that suspicious food, although thoroughly cooked, is not fit for human or animal consumption.

Lytic Principle of Diphtheria Bacillus.—A lytic principle active against *Corynebacterium diphtheriae* was isolated by Blair (*a*) from the intestinal contents of guinea-pigs inoculated with diphtheria bacilli, (*b*) from the peritoneal exudate of guinea-pigs inoculated with diphtheria bacilli, (*c*) from a diphtheria culture 2 months old. Two strains of diphtheria bacilli possessing different degrees of resistance were isolated by the action of a lytic principle on a virulent strain. These two strains were not virulent for guinea-pigs weighing 250 gm. The majority of the lytic principles obtained were not specific. They dissolved several strains of diphtheria bacilli, as well as members of the colon-typhoid-dysentery group. A guinea-pig inoculated with a mixture of equal parts of a lytic principle and a suspension of diphtheria bacilli was not killed in four days. A guinea-pig inoculated with the same strain of diphtheria bacilli alone died in forty hours.

Maine Medical Association Journal, Portland

15: 25-48 (Sept.) 1924

Heart Diseases Complicating Pregnancy. B. E. Hamilton, Boston.—p. 25.
Intestinal Obstruction. C. E. Richardson, Skowhegan.—p. 35.

Military Surgeon, Washington, D. C.

55: 425-552 (Oct.) 1924

Indian Medical Service. H. Work.—p. 425.
Army Regulations. R. C. McDonald.—p. 429.
Hookworm Infection. G. R. Callender and T. Bitterman.—p. 434.
Asthma and Hay-Fever. W. H. Allen.—p. 443.
Chailletia. F. Smith.—p. 455.
Wounds in War. R. Greboire.—p. 471.
Canned Food. G. M. Ekwurzel.—p. 477.
Army and Navy Hospital, Hot Springs, Arkansas, and Waters of Hot Springs National Park. J. H. Trinder.—p. 488.
Tuberculosis. P. P. Jacobs.—p. 498.
Mental Defect. R. F. Sheehan.—p. 515.

New Orleans Medical and Surgical Journal

77: 141-176 (Oct.) 1924

Surgery of Thyroid. W. H. Parsons, Vicksburg, Miss.—p. 140.
Two Cases of Dermoid Cyst with Twisted Pedicle. A. S. Kiblinger, New Orleans.—p. 146.
Rehabilitation of Recovered Patient. D. H. Keller, Pineville.—p. 147.
Head Injuries. J. H. McLain, Jackson, Miss.—p. 156.
Ten Cases Epidemic Vomiting in Children. M. S. Picard, Shreveport.—p. 159.
Surgical Appendix. T. T. Batson, Hattiesburg, Miss.—p. 161.

U. S. Naval Medical Bulletin, Washington, D. C.

21: 479-613 (Oct.) 1924

Physical Examinations. W. A. Bloedorn.—p. 479.
Fluoroscopic Study of Chest. O. B. Spalding.—p. 484.
Acidosis. W. S. Sargent.—p. 507.
Recording Lesions in Lower Genito-Urinary Tract. R. M. Lhamon.—p. 536.
Treatment of Gonorrheal Epididymitis with Sodium Iodid. A. J. Chenery.—p. 547.
Preparing Bacillus Acidophilus Milk. H. V. Hughens.—p. 548.
Aspects of Lobar Pneumonia. E. L. Lanman.—p. 550.
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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 605-650 (Oct. 4) 1924

*Acute Osteomyelitis. J. Fraser.—p. 605.
Surgical Treatment in Auricular Fibrillation Occurring in Toxic Goiter. T. P. Dunhill.—p. 611.
Blood Donors. G. Keynes.—p. 613.
Two Problems in Treatment of Cleft Palate. F. W. Goyder.—p. 615.
Roentgen-Ray Examination in Relation to Aspects of Pulmonary Tuberculosis. J. H. Mather.—p. 615.
Indications and Contraindications for Artificial Pneumothorax. F. G. Chandler.—p. 617.
Large Abscess of Lung: Drainage by Posture: Recovery Without Operation. L. Mackey.—p. 619.
Incubational Changes in Red Cell Count in Inoculated Malaria. A. Pijper and B. D. Russell.—p. 620.
Small-Pox: An Unrecognized Outbreak. F. A. Sharpe and B. S. Lond.—p. 621.
Life-History of Case of Myxoedema. H. M. Raven.—p. 622.
Abscess of Frontal Lobe: Operation: Recovery. S. W. Swindells and A. H. Rankin.—p. 622.

Treatment of Acute Osteomyelitis.—It is a rule in Fraser's practice that as soon as a case of osteomyelitis of the ordinary staphylococcal type comes under observation vaccine treatment is begun. Until an autogenous vaccine is available, which will be four or five days, a stock staphylococcal vaccine is used. An initial dose of 200 million is given, on the third day a dose of 400 million is used, and this is repeated on the fifth day; thereafter the autogenous vaccine is given every fourth or fifth day. As far as possible an attempt is made to arrange that the vaccine is given at the lowest points of the pulse and temperature curves. In the especially acute septicemic type of osteomyelitis and in the case which has not responded to vaccine treatment Fraser recommends serum therapy. After a preliminary sensitization test he administers large doses of either a stock serum, a specially immunized serum, or, if neither of these is available, the ordinary horse serum. The drug is given daily in increasing doses, beginning with 10 c.c. and reaching 100 c.c. The conditions which call for serum he considers equally suitable for blood transfusion, especially in young children. The value of blood transfusion in this connection is enhanced if it is modified by the combination of exsanguination with the transfusion. The most striking demonstration of the value of the method is seen in cases of osteomyelitic septicemia which persist in spite of the ordinary lines of treatment.

2: 651-696 (Oct. 11) 1924

*Treatment of Hallux Valgus and Rigidus. R. Jones.—p. 651.
*Operative Treatment of Arthritis Deformans of the Large Joints. H. Frankling.—p. 656.
Treatment of Acute Arthritis of the Hip. S. T. Irwin.—p. 658.
Lesions of Ulnar Nerve in Region of Elbow. H. Platt.—p. 659.
Intracapsular Method of Cataract Extraction. I. Barraquer and A. H. H. Sinclair.—p. 660.
Paresis of Accommodation as a Late Sequela of Encephalitis Lethargica. A. L. Whitehead.—p. 665.
Relation of Blood Urea to Diabetic Coma and to Duration of Diabetes Mellitus. C. E. Brunton.—p. 665.
Acute Pneumonic Pulmonary Tuberculosis Treated by Artificial Pneumothorax. J. Torrens and A. G. E. Wilcock.—p. 666.
Case of Streptococcal Meningitis Treated with Serum: Recovery. C. W. Vining and H. P. Thompson.—p. 667.
*Obstinate Constipation Treated by Crushing Lower End of Colon and Upper End of Rectum. J. A. C. Macewen.—p. 668.

Treatment of Hallux Valgus.—Operations for the correction of deformity in cases of hallux valgus which present no functional debility should not be undertaken lightly, and never unless the patient is prepared to wear appropriate boots, according to Jones. For mild cases without symptoms when the deformity can easily be rectified without force, it is sufficient to divide the capsule and reef it to the inner side, divide the extensor proprius hallucis, and remove a flap of skin so that when the edges are approximated it will hold the toe in slight abduction. Where there is neither pain nor disability, but where the deformity is more extreme and cannot be rectified by manipulation, it may be necessary to expose the joint, divide the tightened structures on the outer side, divide the extensor proprius hallucis, and perform a cuneiform osteotomy on the inner side. Where the symptoms

are entirely referable to the bursa and do not involve the joint, the bursa should be exsected together with the bony prominence below. A removal of the whole of the metatarsal head with part of the neck should be reserved for those of middle life where ostearthritic and periarthritic changes have occurred, the joint appearing large and gouty. Unless bone is fully removed in such a case pain and stiffness will remain. Removal of the head of the metatarsal should be reserved for those extreme cases associated with bunion where the head is rough and painful and the joint tender. It is more suited to the postathletic age. When dealing with the young athlete special endeavor should be made to retain as much of the metatarsal as possible to maintain the strength of the arch. The incision through bone should be oblique, and a portion of the lower surface of the head left. The structures which hold the bones together should be divided, the bursa and its bony bed should be removed. The toe should be maintained well extended until the wound has healed. In cases of hallux valgus where the symptoms seem to be maintained by friction of the first phalanx with the metatarsal, exsection of the base of the first phalanx may be sufficient. Where symptoms resemble metatarsalgia and pain is referred to the space between the first and second metatarsal heads, an osteophyte is often found attached to the neck on its under surface. This requires removal. In hallux rigidus the operation of choice is removal of the base of the first phalanx, care being taken to remove sufficient bone. The disadvantages of all operations where deformity is excessive and its reduction is effective lies in the fact that the big toe remains too wide apart from the remaining toes, and no boots can be bought to fit the foot. This is due to the increased separation of the first metatarsal from the second. To obviate this deformity Jones advises osteotomy just distal to the base of the first metatarsal, and so approximate the first metatarsal to the second. This will materially lessen the deformity.

Operative Treatment of Arthritis Deformans.—In dealing with arthritis deformans, Frankling has performed twelve arthrotomies of the hip joint: one Murphy arthroplasty, one excision of head of femur, and ten remodeling operations. He has also done twenty-two arthrotomies of the knee joint, as follows: one Murphy arthroplasty, two arthrodeses, fourteen remodeling operations, and five synovectomies. The only death in the series took place after a "remodeling" hip operation, the patient succumbing to alcoholic delirium on the ninth day. There was no wound sepsis. In nearly all the hip cases the freedom of movement which at first resulted tended gradually to diminish in time. Of the ten "remodeling" hip operations the resulting mobility was good in one, fair in seven and bad in two. The functional result of the Murphy arthroplasty was bad. The knee operations gave on the whole better results in this respect than the hip, many of them presenting painless flexion to a right angle a sufficiently long time after operation to justify the belief that such improvement will be permanent. The results as far as the relief of pain is concerned were almost uniformly good, and in many cases there resulted a mobility beyond expectation in joints the stability and weight-bearing powers of which were excellent. In common with other observers Frankling found that results which were disappointing to the surgeon appeared to give satisfaction to the patient.

Operation for Obstinate Constipation.—The patient, a man, aged 36, during adolescence developed chronic dyspepsia with constipation. When about 25 years old the constipation became severe; cathartics had to be used regularly, and the man became an invalid. Right-sided abdominal pain and discomfort now became constant, and the pain in the hypochondriac region was so severe that cholelithiasis was diagnosed and the abdomen opened in 1922. No local lesion was found, but some peritoneal bands passed down to the ascending and transverse colon, matting these slightly, but not sufficiently to cause noticeable obstruction. The appendix was removed at this time. The patient was now hardly capable of the lightest work. Roentgen-ray photographs taken in February, 1924, showed general atonicity and ptosis of the colon, characteristic of the asthenic type of chronic intestinal stasis. Macewen made a vertical median incision in the lower abdomen, extending above the umbilicus. The bladder was turned forward, and the pelvic basin and pelvic colon exposed. A point on the pelvic colon, about 4 inches above the attachments of the peritoneal ligaments of the rectum, at which the kinking was marked, was chosen. A small incision was made at the apex of this kink into the interior of the bowel, and through this incision the blades of a large and powerful crushing forceps were intoduced, one blade going into each limb of the V. One blade therefore descended, as it was introduced, toward the rectum; the other ascended the pelvic colon. The blades were introduced to their full extent so that the blade which descended toward the rectum reached the insertion of the peritoneal ligaments. As the clamp was now closed, the two limbs of the V were approximated, so that 4 inches of the end of the pelvic colon and the beginning of the rectum lay parallel to 4 inches of pelvic colon immediately higher up. Care was taken at this stage to keep the mesenteric attachment of the bowel well away from the proposed line of crushing. The mesentery of both limbs was kept below, or posterior to, the position of the blades of the crushing forceps, then the full crushing power of the forceps was applied. The clamp was kept on for several minutes, and during which a stitch was run along the junction of the two pieces of bowel above, or anterior to, the blades of the crushing forceps, so as to minimize the danger of separation of the pieces of bowel on removal of the clamp. The clamp was then slipped out carefully, and the preliminary incision, made at the apex of the V, was sutured. The abdominal wound was then stitched up. The results of the operation were remarkably good.

Lancet, London

2: 685-736 (Oct. 4) 1924

Looking Back and Looking Forward. I. Owen.—p. 207.
Preventive Aspects of Medicine. C. Porter.—p. 686.
Reasons for Entering Medical Profession. H. Rolleston.—p. 688.
Medical Man of the Future. H. J. Waring.—p. 690.
Fifty Years of Medicine. D. Ferrier.—p. 693.
Surgical Treatment of Angina Pectoris. J. MacKenzie.—p. 695.
Unabsorbable Sutures in Gastroenterostomy. G. A. Upcott-Gill and H. B. Jones.—p. 697.
Lesions of Trachea in Pulmonary Tuberculosis. F. R. G. Heaf.—p. 698.
*Antipneumococcal Serum in the Treatment of Lobar Pneumonia. A. I. G. McLaughlin.—p. 699.
Libel and Slander. H. Woods.—p. 705.
*Blood Platelets and Their Place in Medicine. S. C. Dyke.—p. 714.

Antipneumococcal Serum in Lobar Pneumonia.—From an analysis of twenty-seven cases, McLaughlin concludes that (1) the Type 1 antipneumococcal serum has a beneficial effect on pneumonias caused by other types of pneumococci, but not so marked as the effect on Type 1 pneumonias. (2) The best results are obtained when the serum treatment is instituted early in the disease, preferably before the third day. (3) The initial dose of antipneumococcal serum should be 100 c.c., injected intravenously with the precautions previously mentioned. (4) Serotherapy seems definitely to diminish the incidence of postpneumonic empyema; in fact, in the present series no such cases occurred. In the case of Type 1 pneumonia in which horse serum had been injected as a control, empyema developed.

Rôle of Blood Platelets.—Dyke says it remained for Ledingham in 1914 to demonstrate beyond a doubt the existence of the platelets as entities by preparing with guinea-pig platelets as antigen, an antiserum, capable, on parenteral injection, of destroying the platelets of the same species. This work has since the war been followed up by Bedson, who has not only confirmed this observation, but has shown that the disappearance of the platelets from the blood of the injected guinea-pig is followed by severe purpura. Furthermore, by preparing antiserums against the other formed elements of the blood, Bedson has been able to show that none of these bear any close relationship to the platelets and certainly cannot serve as their sources; antiserums active against red cells, or against the granular or nongranular white cells are without effect on the platelets. The complete proof of the origin of the platelets awaits demonstration, but as to their relationship to the hemorrhagic diathesis and to the production of purpura, the proof, both experimental and clinical, is now complete. It has been established that

destruction of the platelets in the guinea-pig is followed by purpura; clinically, Dyke has shown that in man, when the platelet count descends below 60,000 per cubic millimeter, there is an abnormal tendency to bleed, that when it falls below 10,000 hemorrhage becomes severe and when below 1,000 fulminant. He has, moreover, demonstrated that such a thrombopenia or diminution in the platelet count is associated with prolongation of the bleeding time and failure of the blood clot to contract, though the actual clotting time remains normal.

2: 737-738 (Oct. 11) 1924

Diagnosis of Acute Abdominal Illness in Children. G. Bryan.—p. 737.
Ideal Tooth. A. Keith.—p. 740.
Apparatus for Use in Sigma Reaction. J. W. Bigger.—p. 743.
*Influenzal Arthritis. D. Nabarro and J. F. H. Stallman.—p. 743.
Direct Infection into Heart for Arrest of Heart Beat During Anesthesia. W. B. Howell.—p. 746.
*Infective Endocarditis in Congenital Heart Disease. H. E. A. Boldero and D. E. Bedford.—p. 747.
Plea for Preservation of Premaxillary Bones in Congenital Cleft Palate. A. D. Davis.—p. 749.
Case of Iron-Stone Phthisis. K. Goadby.—p. 752.
Unusual Form of Left Inguinal Hernia. J. A. C. Macewen.—p. 752.

Influenzal Arthritis.—In the three cases of arthritis recorded in this paper the infection was of the knee joint. A gram-negative bacillus resembling *B. influenzae* was obtained in pure culture from all of them, and in the third case it was also isolated from the cerebrospinal fluid. From the evidence available, Nabarro and Stallman believe that the strains of *B. influenzae* which have been isolated from the lesions in influenza (pneumonia, bronchitis, rhinitis) and its complications, meningitis, arthritis, etc., and from healthy carriers, all form one group of organisms which may show marked differences in morphology, and pathogenicity for animals, and in their agglutination and absorption reactions.

Endocarditis in Congenital Heart Disease.—Infective endocarditis in congenitally malformed hearts throws light on the origin of infective endocarditis in general, Nabarro and Stallman say. Local thickening of the endocardium and increased local strain are factors in determining the onset of the infective process in congenital heart disease, and the access of arterial blood to the right heart may explain the unusual frequence of dextral endocarditis in these cases. In the authors' opinion the preponderance of left-sided lesions in endocarditis in general cannot be adequately explained by the higher blood pressure in the systemic circulation, and it may be due to the changed composition of the blood after passing through the lungs.

2: 789-840 (Oct. 18) 1924

Neurology and Its Bearing on Medical Education. E. Farquhar Buzzard.—p. 789.
*"Modern Theory" of Renal Secretion. A. P. Thomson.—p. 792.
*Subacute Infective Endocarditis. J. Gracie.—p. 795.
Therapeutic Effects of Ultra-Violet Radiations. C. L. Pattison.—p. 798.
Pituitary Whole Gland in Chronic Constipation. B. Myers.—p. 799.
Congenital Malformation of Hands. C. M. Beadnell.—p. 800.
Curious Case of Partial Uterine Inversion. H. J. D. Smythe.—p. 800.

Modern Theory of Renal Secretion.—Thomson holds that certain observations do not entirely support the modern theory of renal secretion. This theory, as propounded by Cushny, presumes that when blood passes through the capillaries of the renal glomeruli an exudate consisting of water and all the crystalloid bodies of the plasma, in their respective proportions, is passed out into Bowman's capsule by a process of physical filtration, which is modified normally by such factors as blood pressure and flow, the osmotic tension of the colloids of the blood, and the permeability of the membrane covering the capillary tuft. Thomson does not suggest, however, that because his clinical experiments are not reconciled with the "modern theory," Cushny's views must be set aside completely, for up to a certain point, they are consistent with the filtration reabsorption hypothesis. It may be that the modern theory tells part rather than the whole story of renal excretion. For the time, the author thinks it reasonable to accept the modern theory as correct during renal excretion at a normal rate. During diuresis induced by fluid by the mouth, however, some additional factor must be invoked besides filtration by the glomeruli and reabsorption of threshold bodies at a fixed rate by the tubule cells. It is not known what that factor is; but Hamburger's suggestion that the permeability of the glomerular membrane may be changed very considerably by an alteration in the constitution of the blood brought to it by the afferent arteriole has a great deal to recommend it. It seems that this alteration in permeability may be brought about by changes in the composition of the blood which are so slight that we are at present unable to detect them with certainty. There is other evidence that alteration of the permeability of the membrane may occur in the well recognized fact that once glycosuria has been induced by taking glucose by the mouth, it may persist for some hours after the glycemia has fallen back to a normal or subnormal level. This condition is frequently found in the routine performance of tests of carbohydrate tolerance, and is often not associated with diuresis. Thomson has observed also that diabetics after a period of fasting will remain sugar-free with their glycemia at a higher level than before the fast when they were passing considerable quantities of sugar in the urine. There is often no alteration in the total quantity of urine passed in these cases, and it is difficult to account for them on any other basis than that of a change in the permeability of the glomerular capsule.

Diagnosis of Acute Endocarditis.—Following a clinical study of thirty cases, Gracie says that the essential points in the diagnosis of acute infective endocarditis are: (1) pallor, (2) clubbing of finger-tips, (3) slight irregular intermittent fever, followed by afebrile intervals, (4) increased pulse rate, (5) splenic enlargement, (6) valvular disease, (7) signs of embolism. He recommends a more prolonged convalescence and careful supervision of patients after acute illnesses.

2: 841-892 (Oct. 25) 1924

Harveian Oration on Debt of Science to Medicine. A. E. Garrod.—p. 841.
*Psycho-Physical Interaction. H. Crichton-Miller.—p. 847.
Treatment of Malignant Disease of Testicle. R. M. Handfield-Jones.—p. 850.
Auto-Hemagglutination in Case of Pernicious Anemia. H. Cohen and A. R. Jones.—p. 853.
*Case of Duodenal Ulcer in an Infant. A. M. Thoms.—p. 854.
Case of Intestinal Obstruction Complicating Pregnancy. J. C. Jefferson.—p. 855.
Bilateral Tuberculous Infection of Submaxillary Salivary Glands. H. J. Simson and A. Massey.—p. 855.

Endocrine Deficiencies.—According to Crichton-Miller one of the best examples of conditional etiology is probably dementia praecox. The factor of gonadal inadequacy has been clearly demonstrated by Sir Frederick Mott's researches. Jung and other analysts have shown the constant presence of a conflict over authority. These theories may seem mutually contradictory, but if we regard them from the point of view of conditionalists, we see in them factors which by their conjunction may determine the familiar psychosis. It is clear that the adolescent, as he passes into maturity, regards the challenge of life in relation to two factors. The first is the menacing character of that challenge, and the second is the biologic sense of adequacy within himself. If a boy is always assured by his father that he will never succeed in life if he does not mend his ways, he is apt to conceive of life as a very arduous and exacting proposition. If he feels the potency of a normal young adult male, he will face this and make good. But if the endocrine factor is defective he will retreat from life, and if it is very defective he will still retreat from it, though the prospect of manhood has been presented to him in perfectly suitable terms. There are certain scientific circles in which it is fashionable nowadays to decry organotherapy. It is very natural. The commercial drug houses have exploited organotherapy with more zeal than wisdom. The subject is intensely complex, and it is always easy for the scientist to attribute to suggestion any therapeutic efficacy that may be claimed for organotherapy. The organotherapy of today may be a very feeble affair, but the organotherapy of tomorrow, is going to be based largely on honest clinical observation. There is nothing more dramatic in the whole of medicine than the dissipation of the depression of a subthyroidic patient by the administration of thyroid extract. There is a range of subtle subjective phenomena that depend on endocrine deficiencies or disequilibria and one day we shall be able to treat them by an improved organotherapy.

Duodenal Ulcer in Infant.—A. M. Thoms reports a case of duodenal ulcer in an infant, aged 5 months. He was the first

child of young healthy parents. He was a full-time child and had been bottle fed on various foods. Before coming to the hospital he had been attending a welfare clinic, where his food was carefully regulated. There had always been a tendency to vomiting. Flatulence and constipation were very troublesome. He was a small wasted child, weighing 7 pounds 13 ounces, with no obvious organic disease. He continued to be constipated and vomited slightly at times, generally after feeding. The next day after vomiting bright blood-stained fluid, he seemed well till evening, when he suddenly collapsed and died. At necropsy, a punched-out ulcer was found in the first part of the duodenum, situated on the posterior wall about one-fourth inch from the pyloric sphincter. There was no thickening and very little evidence of inflammatory reaction of the surrounding structures and no peritonitis. Altered blood was present in the lower part of the ileum, and there was slight injection of the Peyer's patches, but otherwise nothing abnormal was found.

Practitioner, London

113: 205-324 (Oct.) 1924

*Alcohol in Medicine. H. Rolleston.—p. 209.
*Social Aspects of Alcohol Problem. A. Newsholme.—p. 216.
*Physiologic Action of Alcohol. E. H. Starling.—p. 226.
*Alcohol and Nervous System. J. Purves-Stewart.—p. 236.
*Alcohol in Relation to Insanity. F. Mott.—p. 244.
*Alcohol in Relation to Life Assurance. R. D. Powell.—p. 264.
*Mortality of Alcoholism. T. H. C. Stevenson.—p. 270.
*Alcohol in Tropics. L. Rogers.—p. 281.
Two Suggestions Concerning Alcohol Question. W. Whitla.—p. 289.
Medical Notes on Alcohol. T. Horder.—p. 292.
Treatment of Alcoholism. F. Hare.—p. 295.
Alcohol from Total Abstinence Point of View. W. McAdam Eccles.—p. 317.

Alcohol in Medicine.—The main value of alcohol, Rolleston says, is in an emergency and as a temporary remedy; for example, at the crisis of pneumonia to stimulate the heart or occasionally as a sedative to induce sleep. The good effect on the heart is immediate and reflex from the mucous membrane of the stomach, but is temporary only, being followed by depression of cardiac power. As pure alcohol is, within limits, a food inasmuch as it protects proteins and fats, there is a prima facie justification for its use in cases in which ordinary nourishment cannot be utilized satisfactorily; but while alcohol is circulating and being oxidized in the blood, it can also produce toxic degeneration of the cells of the tissues. In cases of convalescence from acute disease, when the secretory and motor activities of the stomach are impaired, the addition of alcohol, brandy and whisky being better than beer or thin wines, to the meals may make all the difference between distaste for meals and painful digestion, on the one hand, and ability both to eat and assimilate food, on the other hand. However, a latent craving for alcohol, or a psychosis which would otherwise not have developed, may be activated by the medical administration of alcohol after acute disease. In sudden heart failure and threatened syncope the action of concentrated alcohol on the gastric mucous membrane may by reflex action rapidly and powerfully stimulate the heart. But for this purpose ether is equally effective and has the advantage that it is more volatile and that its effect when it subsequently reaches the heart is more stimulating and less depressing than that of alcohol. Alcoholic drinks relieve worry, may counteract restlessness and so may be of use in inducing sleep, but should obviously be employed with great caution on account of the danger of converting the individual into an addict. To the rule insisted on by Rolleston that alcohol should not be prescribed for continuous use, he says there are exceptions; these are mainly in cases of inoperable malignant disease and other hopeless conditions. It is often better to leave off foods as ordinarily understood and to be content with small quantities at short intervals of alcoholic drinks.

Social Aspects of Alcohol Problem.—Newsholme concludes his paper as follows: If medical and hygienic advice were adopted by every member of the community, compulsory action would not be called for, but this ideal is not attainable in an average population. Even in present conditions so-called restrictive measures imply no serious restriction for the majority of the community, but only for those who are injuring themselves, their families and the nation, in the absence of such compulsion. It is only by increased compulsion in the form of restriction on the sale of alcoholic drinks, backed by the hygienic persuasion of physicians and others, that we can secure reduction more rapidly than at present of the alcoholism which is still a chief cause of crime, disease, destitution and neglect and impoverishment of families in our midst.

Physiologic Action of Alcohol.—Starling's review of the physiologic action of alcohol is decidedly unfavorable to this agent. For one thing he says that the value claimed for alcohol as a heart stimulant in certain infectious disorders, if justified, may be due to its action as an easily absorbed and assimilated foodstuff, or to its action in removing sources of irritation and promoting repose.

Alcohol and Nervous System.—The action of alcohol on the nervous system is considered by Purves-Stewart under three main heads: acute alcoholic intoxication, chronic alcoholic poisoning and paroxysmal dipsomania.

Alcohol and Insanity.—Mott's paper is based largely on investigations previously reported on by himself and others. He says: If alcohol is the essential factor in the production of insanity, there will be certain specific indications pointing to the more or less specific action of the alcohol. Even in the absence of a history of alcoholic indulgence, the physical signs and symptoms which point to alcoholism and the cause of the symptoms are much more valuable than any statement made by the patient or even by the friends or nurse. The more definite the signs and symptoms of neuritis, associated with mental symptoms, the more certain can we be that the cause is removable, and the more hopeful is the prognosis. These signs and symptoms of alcohol as the cause per se associated usually with microbial toxemia, are found most pronounced in the two conditions of mental and nervous disorder which occur in hospital practice, viz., delirium tremens and polyneuritic psychosis.

Alcohol and Life Assurance.—One of the liabilities which in Powell's opinion may account for the greater safety of life for a total abstainer from alcohol is that an amount of the drug far short of intoxication may inhibit restraint of elemental passions and lead to indiscretions often resulting in venereal disease.

Mortality of Alcoholism.—Stevenson quotes figures which show that in England and Wales during the four years of compulsory temperance, from 1914 to 1918, there was a decline of 84 per cent. in convictions for drunkenness, and a decline of 88 per cent. in the mortality ascribed to alcoholism.

Alcohol in Tropics.—Rogers condemns the use of alcohol in the tropics. He is strongly of the opinion that the health of white people in the tropics would be materially benefited if they would abstain from the use of alcohol.

Annales de l'Institut Pasteur, Paris

38: 759-850 (Sept.) 1924

Review of Treatment in Infectious Diseases. M. Nicolle and E. Césari.—p. 759.
Campaigns Against Malaria in Algiers. E. Sergent et al.—p. 775.
*Antibodies and Cells in Immunity. S. Metalnikov.—p. 787.
Technic for Seriodiagnosis in Syphilis. S. Mutermilch.—p. 827.
Method for Estimating Lactic Fermentation. Richet and Cardot.—p. 842.
Regularity in Lactic Fermentation. A. Lumière.—p. 848.

Antibodies and Cellular Reactions in Immunity.—The basis of every immunity, says Metalnikov, is the immunity of the cell, its defense activity, reactions and secretions. The activity may be enhanced through exercise, stimulation and immunization. The presence of antibodies in the fluids of the body is a secondary phenomenon, which appears mostly in higher animals. Coexistence of a cellular immunity and antibodies is the perfect form of immunity, which occurs only in certain bacterial infections. In most diseases there is no evidence that the antibodies play any part in the immunity.

Bulletin de l'Académie de Médecine, Paris

92: 967-1006 (Oct. 7) 1924

Report on Lectures on Radiotherapy of Cancer. C. Regaud.—p. 978.
Serotherapy of Anthrax in Man. J. Lignières.—p. 980.
Measures Against Anthrax. J. Lignières.—p. 986.

*Diathermy in Diabetic Gangrene. Cluzet and Chevallier.—p. 992.
Spontaneous Recovery in Bacterial Endocarditis. E. Libman.—p. 998.

Diathermy in Moist Gangrene of Diabetics.—Cluzet and Chevallier assert that five cases of moist gangrene of the leg, and one case of moist gangrene of the scrotum, were completely cured with diathermy. Improvement was noted from the first sittings, and the action on the blood vessels was soon revealed by the change in the oscillometer record. The recovery occurred whether insulin was used or not. Diathermy, they say, may save in such instances from amputation. The details of the technic are given.

Bulletins de la Société Médicale des Hôpitaux, Paris

48: 1347-1374 (Oct. 10) 1924

*Massive Serotherapy in Tetanus. Trabaud and Baur.—p. 1348.
*Toxemic Jaundice Due to Mussels. N. Fiessinger and A. Ravina.—p. 1351.
*Sensitization to Bread. Pasteur Vallery-Radot and A. R. Barrieu.—p. 1364.
Enormous Urticaria Caused by Bread. Pagniez and Coste.—p. 1368.
*Nephritis of Nasopharyngeal Origin. M. Léon-Kindberg and A. Bloch.—p. 1371.

Large Doses of Tetanus Antitoxin.—Referring to a case of general, and another of localized tetanus, in which totals of 430 c.c. of antitoxin in three days, and of 740 c.c. in two weeks in the second case, were used with good results, Trabaud and Baur suggest the injection of about 100 c.c. in instances of infected wounds. Contrary to the American view, they prescribe chloral as an adjuvant to relieve pains and spasms. It may also promote the passage of subcutaneously injected antitoxin into the cerebrospinal fluid.

Toxic Jaundice After Eating Mussels.—Fiessinger and Ravina report several cases in which jaundice developed insidiously two or three days after eating a dish of *Mytilus edulis*. Their research on animals confirmed that a toxic substance can be extracted from common mussels. It probably has a deleterious action on the liver in the predisposed.

Sensitization to Bread in Urticaria.—Vallery-Radot and Barrieu report a case of sensitization to bread in a boy, aged 11, which had manifested itself in daily recurrences of urticaria for nine years. Attempts at desensitization failed, but the whole wheat of war time, which included also the hull of the grain, checked the disturbance. It may be assumed that the bran contains an urticaria-preventing vitamin. Skin tests showed also a sensitization to other foods which caused the same disturbance, a rare phenomenon in urticaria. A spontaneous desensitization occurred after five months. A similar intolerance to bread was noted in another case.

Nephritis of Nasopharyngeal Origin.—Léon-Kindberg and Bloch describe a case of convulsions with albuminuria and arterial hypertension in a young man. A chronic infection of the tonsils and of the nasopharyngeal region was apparently the causal factor of the disease. They believe that repeated bacterial emboli, rather than toxemia, produced the nephritis. Tonsillectomy was followed by complete recovery for the twenty months to date.

Gynécologie et Obstétrique, Paris

10: 145-224 (Sept.) 1924

*Double Uterus. M. Guilleminet and L. Michon.—p. 145.
Early Intestinal Occlusion After Gynecologic Operations. S. Mossé and R. Doubrère.—p. 182.
Operation Versus Irradiation for Uterine Fibromas. H. Hartmann.—p. 203.

Double Uterus.—Guilleminet and Michon tabulate the details of fifty-eight cases of different dual malformations of the uterus, and ten unpublished cases, seeking to facilitate the recognition of such anomalies, and guide treatment.

10: 225-304 (Oct.) 1924

*Modified Cesarean Section. L. Portes.—p. 225.
Ureter-Vaginal Fistulas After Hysterectomy. C. Lenormant and R. Leibovici.—p. 251.
*Retention of Fetus. A. J. Powilewicz and Morace.—p. 280.

Modified Extraperitoneal Cesarean Section.—Portes has modified extraperitoneal cesarean section, leaving the uterus temporarily outside, after the fetus has been removed. He performs the operation in two stages with an interval of twenty to thirty days. His illustrations show the technic. The method is indicated if it is too late for conservative cesarean section, before rupture of the membranes, and hysterectomy or cephalotripsy is otherwise inevitable. The immediate results in ten cases were excellent. The involution of the uterus, and the recovery of the women occurred normally, and all but one of the women nursed their infants. It is still uncertain whether the operation may not cause sterility. But the patency of the tubes was manifest when the uterus had been restored to place.

Retention of Fetus and Toxemia.—Powilewicz and Morace point out that after the death of the fetus, albuminuria persists as long as the fetus is retained in the uterus. The albumin disappears in about 25 per cent.; it increases again during labor in 10 per cent., although it is never intense, nor accompanied by complications. It coincides sometimes with a high arterial tension, which ceases after expulsion of the fetus. Evidently a slight toxemia exists while the fetus remains in the uterus. Notwithstanding the death of the fetus, treatment to ward off or combat toxemia is indispensable.

Journal d'Urologie Médicale et Chirurgicale, Paris

18: 201-280 (Sept.) 1924

The Testicle Two Years After Removal of Vas Deferens. E. Retterer.—p. 201.
*Diverticula of Bladder. M. Negro and H. Blanc.—p. 217.
*Tuberculous Kidney and Function Tests. A. Boeckel.—p. 248.
*Strangulated Bladder in Femoral Ring. S. Laskownicki.—p. 251.
Instrument to Aid in Cystostomy. R. Bonneau.—p. 254.

Diverticulum of the Bladder.—Negro and Blanc observed in three cases, out of thirteen, a diverticulum of the bladder in subjects under 40. The group included two women. The size, which varied from that of a nut to an orange, did not depend on the age, as two of the largest were in patients aged 24 and 32. Multiple diverticula were rare, and smaller. Calculi were found in two diverticula, and a degenerated papilloma in one. Cystoscopy combined with cystoradiography aids in the diagnosis, and surgery is the only treatment.

Nephrectomy on Kidney with Minimal Lesions.—Boeckel removed a tuberculous kidney with merely one single, small tuberculous focus in one papilla. The rate of urea concentration and urea excretion was even higher in the diseased kidney than in its healthy mate. Only the phenolsulphonephthalein test revealed a slight deficiency in the functioning of the tuberculous kidney (25 per cent. against 30 per cent.). He relies on this test as one of great precision in determination of kidney functioning.

Incarceration of the Bladder in the Crural Ring.—Laskownicki reports a case of hernia of the bladder which was strangulated in the crural ring. He says, it is the eighth case published to date. The diagnosis was not made before the operation, neither in his case nor in the similar seven cases, nor in the sixteen cases of strangulated hernia of the bladder in the inguinal canal. The clinical picture resembled that of strangulated ileus. Exceptionally, hematuria or dysuria may give the clue to the disturbance. In cases of strangulated femoral hernia, the bladder should be borne in mind.

Paris Médical

297-324 (Oct. 18) 1924

Psychiatry in 1924. J. Camus and N. Péron.—p. 297.
Catatonia. H. Claude.—p. 303.
*Mental Disturbances in Multiple Sclerosis. J. Lhermitte.—p. 307.
Mental Disturbances of Extracortical Origin. J. Camus.—p. 316.
Physiologic Voluptuous Reflexes from Anxiety. Laignel-Lavastine.—p. 321.

Psychic Disorder in Multiple Sclerosis.—Lhermitte emphasizes that multiple sclerosis is a neurologic disease, which is accompanied by psychic disorder. The disturbances for which lesions in the brain are responsible, may aid in determining the extent of the organic changes in it.

Presse Médicale, Paris

32: 809-816 (Oct. 11) 1924

*Test for Classification of Hydroceles. M. Lisbonne.—p. 809.
Hexamethylenamin in Postoperative Retention of Urine. L. Cheinisse.—p. 809.

Chloroform Coagulation of Hydrocele Fluid for Diagnosis.—Lisbonne describes a reaction which occurs in mixing the hydrocele fluid with chloroform. The results vary with the etiology. Research was made on forty-five fluids, and in forty instances the results of the reaction were compared with the operative findings, which harmonized in thirty-seven cases. The hydrocele always proved to be of an essential or primary nature when the fluid did not coagulate after prolonged contact with chloroform. The coagulation was rapid, in from five to thirty minutes, when the hydrocele was of syphilitic, tuberculous or cancerous nature. The coagulation was slow, four to six hours, if a pachyvaginalitis was responsible for the accumulation of fluid.

32: 817-824 (Oct. 15)

*Iodized Oil in Bronchiectasis. P. Nicaud and M. A. Dollfus.—p. 817.

Iodized Oil in Radiography of Bronchiectasis.—Nicaud and Dollfus succeeded, by injecting iodized oil before radiologic examination, in confirming the diagnosis of dilatation of the bronchi in two cases. The patients, aged 12 and 25, had been treated for several years for tuberculosis. The injection was also followed by a marked diminution of expectoration (from 180 gm. to 25 gm.).

32: 825-832 (Oct. 18)

*Air-Borne Cancer Metastasis. M. Letulle and A. Jacquelin.—p. 825.

Air-Borne Metastases in Lung.—Letulle and Jacquelin observed a case of primary cancer in the lung with metastases in the other lung, in a woman, aged 36. The microscopic findings showed that the actively proliferating tumor cells had spread into the bronchi. Some of these cells had then been breathed into the bronchial tubes of the opposite lung, and formed the secondary epithelioma, air-borne metastases (*métastases aériennes*).

32: 833-840 (Oct. 22)

*Diathermy in Intermittent Limping. C. Lian and P. Descoust.—p. 833.

Diathermy in Intermittent Claudication.—Lian and Descoust declare that in treatment of intermittent limping, diathermy should be preferred to diet, drugs, and even to sympathectomy. The diathermy does not act on the large arteries, only on the small and the capillaries, but it considerably improves the functional disorder. It relieves from coincident spasms, and enhances the metabolism and nutrition of the tissues. Diathermy treatment is used in the beginning every day, later every third day. The course consists of twenty applications, each of from thirty to forty minutes. The course should be repeated about every three months. A current of 1,500 ma. is needed, and the electrodes have to be placed well above the point of obliteration. In two patients, remarkable improvement was manifest; only slight relief in a third, and failure in two patients with complete obliteration of the artery.

Bulletino delle Scienze Mediche, Bologna

96: 113-192, 1924

*Progress in Serology of Typhoid. A. Felix.—p. 113.
Toxic Phenomena from Antipyrin. R. Menzani.—p. 123.
Primary Hemangioma in Striped Muscle. Z. Romiti.—p. 126.
Indications for Treatment at the Seashore in Pulmonary Tuberculosis. G. Cardi.—p. 144.

Serology of Typhoid.—Felix' research, with Weil, on the proteus reaction in typhus demonstrated that certain antigens have two receptors. In every natural typhoid serum there is usually an agglutinin that clumps in large flakes and another that makes small flakes. With an artificial immune serum, with the homologous bacilli, both types are at work, but with an alien bacillus, if there is any agglutinin present it is only of the fine-flake type. In his experience with typhoid and paratyphoid in Palestine the last two years, the fine-flake agglutinin was invariably absent in the graver cases. No connection between the large-flake agglutinin and the course of the disease could be detected. Vaccination against typhoid does not induce production of the fine-flake agglutinin. This discovery has been a serious blow to antityphoid vaccination. The phase of bacteremia does not differ in the vaccinated and the nonvaccinated. In short, he affirms that the present method of preventive vaccination against typhoid does not accomplish all that we have been crediting it with. The technic must be perfected until it induces fine-flake agglutination, testifying to the vigorous immune reaction induced by it.

Policlinico, Rome

31: 1323-1353 (Oct. 13) 1924

Osteoplasty of Skull Fractures. G. Baggio.—p. 1323.
*Amebiasis in Sicily. G. Carbonaro.—p. 1327.

Amebiasis in Sicily.—Carbonaro finds that amebic dysentery occurs quite frequently in Sicily. One of his patients had recurring attacks of hematuria and pyuria due to amebas. He recovered almost completely after emetin treatment.

Rivista di Clinica Pediatrica, Florence

22: 649-728 (Oct.) 1924

*Etiology of Chorea. C. Cocchi.—p. 649.
Curability of Tuberculous Meningitis. C. Francioni.—p. 688.
Herpes Zoster and Chickenpox. A. Cividali.—p. 699.

Chorea.—Cocchi cultivated gram-positive micrococci from the blood of four children with chorea. They were agglutinated by the serum of chorea patients. The germs caused encephalitis in a monkey.

Archivos Españoles de Pediatría, Madrid

8: 323-386, 1924

Protein Therapy in Chorea. Ramón Gómez Ferrer.—p. 323.

8: 451-514, 1924

Experiences with Congenital Heart Disease and Arrhythmia in Children. J. Bravo y Frias.—p. 451.
Infant Mortality in Spain and Means to Combat It. Garelly.—p. 484.

Archivos Latino-Amer. de Pediatría, Buenos Aires

18: 337-400, 1924

Infant Department of Public Health Service in State of S. Paulo, 1923. C. Ferreira.—p. 337.
Case of Meningitis from Congenital Syphilis. C. Pelfort.—p. 353.
*Ulcerative Syphilis of the Face. M. A. Jaureguy.—p. 357.
*Pyelitis in Young Infants. María Armand Ugón.—p. 363.
Essential Nocturnal Cough. J. M. Obarrio.—p. 367.
Pseudoleukemic Splenic Anemia with Scurvy. R. Berro.—p. 373.
Case of Amaurotic Family Idiocy. J. M. Valdes, Jr., and R. Laje.—p. 378.

Ulcerative Syphilis of the Face.—Jaureguy relates that the aspect was that of extensive lupus of the face in the boy, aged 7. The nostrils had sloughed off, but the whole process rapidly healed over under six injections of neo-arsphenamin.

Pyelitis in Infants.—Routine examination of the urine in all cases of gastro-enteritis in Morquio's service has revealed an unsuspected prevalence of pyelitis, even in the mildest cases of gastro-enteritis. In four such cases described, the infants were 2 months old; three were boys. The pyelitis persisted for several months, yielding finally in one case to injections of own blood. In two of the children the kidney was large and tender; both kidneys in one. The colon bacillus was found in all. Pyelitis should be suspected whenever the temperature runs up after apparent subsidence of symptoms of digestive derangement.

Revista Ibero-Amer. de Medicina, etc. Físicas, Madrid

1: 243-258 (Sept.) 1924

*Electrocoagulation of Hemorrhoids. Piga and Freixinet.—p. 243.
The Calcium Ion in Mineral Waters. José Palancar.—p. 246.
The Slow Actions of Radioactivity. Jose Muñoz del Castillo.—p. 251.

Electrocoagulation in Treatment of Hemorrhoids.—Piga and Freixinet relate that more than twenty of their 103 patients had been given operative treatment before, without permanent relief. All of the 103 treated by electrocoagulation were improved, and a definite cure seems to have been realized in nearly all.

Revista de Ciencias Médicas, Mexico City

3: 189-227 (Sept.) 1924

Congress on Venereal Diseases. E. Pous Chazaro.—p. 189. See Mexico Letter, p. 1446.
Tuberculosis of the Liver. R. Alcocer.—p. 191.
*Aneurysm of the Aorta. G. Gracia García.—p. 197.
Valvular Heart Disease. E. Moreno.—p. 207.

Aneurysm of the Aorta.—In Gracia García's case, the tumor had been noted for only four months but it had grown to

enormous size, and was hard in some places and soft in others, and there was a history of local trauma. There was no thrill, no murmur, and puncture was negative. The man, aged 33, died suddenly while coughing, and necropsy revealed a hematoma communicating with the opening of the aneurysm. The rapid growth and the size had suggested sarcoma.

Revista Mexicana de Biología, Mexico, D. F.

4: 165-193 (Aug.) 1924

Mexican Protozoa. VI. H. Bravo Hollis.—p. 165.
*Respiration Rhythm of Guinea-Pigs. Margarita Delgado.—p. 170.
*Oxydases in the Blood and Altitude. J. Joaquín Izquierdo.—p. 188.
*Evolution of Love of Offspring. Alicia E. Reyes.—p. 190.

Respiration Rate in Guinea-Pigs.—Delgado found the extremes 112 and 43 per minute in 200 guinea-pigs at Mexico City, the average between 90 and 60. Neither sex nor gestation seemed to influence the respiration rate, but it is promptly modified by fright, even from merely a noise.

Oxydases in the Blood at Moderate Altitudes.—Izquierdo was unable to detect any changes in the oxydase power of the blood serum at the altitude of Mexico City, about 7,000 feet. His research included twenty human subjects, ten cattle, and a group of rabbits and guinea-pigs, twenty of each.

Evolution of Love of Offspring.—Reyes remarks that the turtle's covering up its eggs with sand is probably merely to reserve them for its own consumption. With changing conditions of food or voracity, the parents in different species ceased to devour their offspring, but the protecting impulse persisted. In mammals, after the period of the relief afforded the distended mammary glands by the suckling, the interest in the young ceases. Man is the only species in which care for the young persists beyond lactation, but even today, she declares, parents regard their children as their private property, if not to eat them, like the fishes, to appropriate the product of their labor. The consequence is that human childhood is abnormally prolonged, and our civilization has produced the monstrous result that an individual is ready to reproduce his species before he is self-sustaining.

Revista de Psiquiatría y Disciplinas Conexas, Lima

5: 193-292, 1924

Granville Stanley Hall. H. F. Delgado.—p. 193.
Adjustment of Character to Social Standards. P. Wilson.—p. 207.
*Filariasis with Psychosis. H. F. Delgado et al.—p. 209.
*Rhinorrhea and Epiphora. E. Ciotolo.—p. 221.
Peruvian Folklore. G. Quintana.—p. 225.

Filariasis with Psychosis.—The patient was a Japanese, in Peru, with *Filaria bancrofti* in the blood, who had developed a manic-depressive psychosis. The authors have been impressed with the frequent mention of suicide in connection with filariasis.

Rhinorrhea and Epiphora.—Ciotola treats with atropin the sequence: chilling, over-stimulation of the sympathetic, inviting infection, and the resulting reflex rhinorrhea and epiphora. It is futile to treat the centrifugal element alone and leave the centripetal and the medullar factors unmodified.

Semana Médica, Buenos Aires

2: 625-688 (Sept. 18) 1924

*Pulsus Alternans with Hypotension. A. Navarro.—p. 625.
Case of Typhoid Spondylitis. F. E. Ciarlo.—p. 628.
Blood Changes in Chronic Uremic Nephritis. J. R. Goyena.—p. 634.
The Basal Metabolism in Diagnosis. C. Fernández Speroni.—p. 635.
*Electrocardiogram After Sympathectomy. F. C. Arrillaga.—p. 638.
Hydatid Cyst in Middle Adductor. J. Leyro Díaz.—p. 642.
Technic for Deep Radiotherapy. J. F. Merlo Gómez.—p. 645.
Two Long-Bone Grafting Cases. G. C. Palacios.—p. 651.
Radioactive Substances in Therapeutics. P. Castro Escalada.—p. 653.
The Race Question. V. Delfino.—p. 674.
Hysteria and Its Treatment. C. André.—p. 676.

Pulsus Alternans with Hypotension.—Navarro regards the prognosis as extremely grave when hypotension accompanies pulsus alternans. This combination was encountered in three of his eight cases of pulsus alternans last year, and all in this group died.

Resection of Cervical Sympathetic.—Arrillaga charts the effect on the electrocardiogram of cervical sympathectomy in three patients with angina pectoris.

Beiträge zur klinischen Chirurgie, Tübingen

132: 249-483, 1924

*Surgery of the Sympathetic. H. Kümmell, Jr.—p. 249.
*Walling in the Infectious Focus. O. Thomann.—p. 324.
Paranasal Transethmoid Access to Pituitary. S. Frey.—p. 346.
Experimental Research on Regeneration of Bone. H. Koch.—p. 364.
Fractures of the Pelvis. L. Hirsch.—p. 441.
The Blood Vessels of the Scalp. R. Goldhahn.—p. 466.
Operative Correction of Rachitic Curvature. Schepelmann.—p. 482.

Surgery of the Sympathetic Nervous System.—Kümmell analyzes the outcome of resection of the cervical sympathetic in 21 cases, and of periarterial sympathectomy in 59 (bilateral in 23)—a total of 23 cervical and 82 peripheral sympathectomies. Improvement was evident in all at first after the decortication of the artery, and the cure has persisted to date in 3 of the 4 cases of Raynaud's gangrene; in 2 of 3 freezing gangrene cases; in one of 3 diabetic gangrene cases; in 3 of 8 trophoneurotic lesions in a stump, hand or foot, and a tabetic with trophic ulcers. Lancinating pains were cured only temporarily in 2 out of 3 cases. A cure was realized only in 3 of 11 leg ulcer cases, and a roentgen ulcer was not modified. Eczema subsided in 4 of 5 cases, but the 7 patients with psoriasis displayed only transient benefit. In the one case of each, hyperkeratosis and dyshidrosis were clinically cured. The anatomy and physiology of the sympathetic and vagus are discussed, with a colored chart and other illustrations. The sympathetic ganglion just above is the storehouse for the pains from the lesion. Decortication of the artery is such a comparatively simple intervention, he says, that it deserves a trial in all the groups in which it has given any good results, especially for vasomotor-trophic lesions and eczema.

Blocking an Infectious Process with Own Blood.—Thomann confirmed the remarkable way in which the defensive forces rally for a successful defense, when a hematoma is induced by injection of own blood, encircling and walling in the process. Colored plates show the behavior of the leukocytes and the destruction of the bacilli. In a clinical case of a large carbuncle on the back, by the fourth day a wall of leukocytes had developed at the edge of the hematoma, walling in the staphylococci. By the sixth day scarcely any could be found.

Deutsche medizinische Wochenschrift, Berlin

50: 1397-1428 (Oct. 10) 1924

Alveolar Carbon Dioxid Tension. W. Arnoldi.—p. 1397.
*Treatment of Hypertrophy of the Breast. E. Holländer.—p. 1400.
*Syphilitic Peritonitis and Liver Fever. S. Korach.—p. 1402.
The Blood in Lead Workers. Kretschmer.—p. 1404.
Temporary Sterilization of Women. H. Naujoks.—p. 1406.
*Tuberculin and Antibody Reaction. Moral and Sarbadhikary.—p. 1408.
*Treatment of Varicose Veins. F. G. Meyer.—p. 1410.
Diagnosis of Jaundice. E. Klopstock.—p. 1411.
*Dosage of Nonspecific Drugs. W. Patzschke.—p. 1412.
Roentgenology of Urinary Affections. J. Volkmann.—p. 1413.
*Serum After Castration. H. Küstner.—p. 1414.
Paratyphoid. S. Gottschalk.—p. 1414.
Survey on Orthopedics. II. H. Debrunner.—p. 1416.
Experiences in East Africa. W. Lenz.—p. 1417.
Some Medicolegal Questions. Ebermayer.—p. 1418.

Treatment of Hypertrophy of the Breast.—Holländer observed pendulous breasts especially in women with a genu valgum, and in those who had attained puberty at a young age, before the skeleton was well developed. The condition is comparatively rare with a straight spine. He describes his method of operation which avoids injury to the blood and lymphatic vessels, and to the communications between the nipple and the secreting parts.

Syphilitic Peritonitis and Liver Fever.—Korach describes a case of diffuse adhesive peritonitis of syphilitic origin. He believes in the existence of fever in uncomplicated syphilitic affections of the liver.

Tuberculin and Antibody Reaction.—Moral and Sarbadhikary mixed tuberculin with serum from tuberculous and healthy subjects. It produced a stronger tuberculin reaction after standing for twenty-four hours than when injected immediately. They found, however, the same phenomenon when mixing tuberculin with other proteins, and even when using these proteins alone.

Treatment of Varicose Veins.—Meyer reserves the Rindfleisch operation for the gravest cases of varices on the legs.

Dosage of Nonspecific Drugs.—Patzschke found that patients with an increased sedimentation speed of the blood reacted more energetically to injections of nonspecific proteins.

The Serum After Castration.—Küstner applied Abderhalden's method to eighteen women who had been castrated by roentgen rays. The serum of sixteen of these patients hydrolyzed ovarian substance.

Medizinische Klinik, Berlin

20: 1417-1452 (Oct. 12) 1924

*Roentgen Diagnosis and Treatment of Tuberculosis. R. Jaksch-Wartenhorst.—p. 1417.
*Cerebral Dyspnea. L. Hess and E. Pollak.—p. 1422.
*Spontaneous Hemorrhage from the Nose. W. Anthon.—p. 1425.
Fatal Poisoning by Contrast Meal. Althoff.—p. 1426.
*Free Cartilage Grafts. H. Ruef.—p. 1428.
Meteorism in Intestinal Obstruction. Brasch.—p. 1429.
Gaucher's Splenomegaly. L. Pick.—p. 1433. Cont'n.
Preparations of Arsenic and Iron. Morawitz.—p. 1437. Conc'n.
Obstetric Breviary. F. Eberhart.—p. 1440. Cont'n.
Pathogenesis of Diabetes. C. Funck.—p. 1442.
Description of Congenital Syphilis in Twelfth Century. P. Hildebrand.—p. 1451.

Roentgen Diagnosis and Treatment of Tuberculosis.—Jaksch-Wartenhorst reviews the use of roentgen rays in the diagnosis and treatment of pulmonary tuberculosis. He emphasizes that in both lines an inexperienced physician may do more harm than good.

Cerebral Dyspnea.—Hess and Pollak found grave changes in the locus ceruleus in two cases of diabetic coma. Similar changes were also observed in other dyspneic conditions of cerebral origin. They consider this part of the brain as another respiratory center.

Spontaneous Hemorrhage from the Nose.—Anthon points out that only the usual small nasal hemorrhages originate in the anterior third of the septum. In profuse bleeding which cannot be arrested by tamponing, he treats the nasal cavity with cocain and epinephrin. If methodical examination reveals the seat under the lower turbinate, he turns this bone upward with Killian's speculum. After this the bleeding artery can be found and treated with chromic acid. The fracture of this bone does no harm except in hemorrhagic conditions.

Cartilage Grafts.—Ruef claims permanent results in free grafts of cartilage—especially for reconstruction of the nose. He ascribes the failures to faulty technic.

Mitteil. a. d. Grenzgeb. d. Med. und Chir., Jena

38: 1-148, 1924

*Secretion After Cholecystectomy. F. Rost.—p. 1.
*Visceral Motor Reflexes. H. Schlesinger.—p. 8.
Colloidal Silver in Therapeutics. H. Koller-Aeby.—p. 16.
*Localization of Vascular Disease. F. Kazda.—p. 33.
*Gastro-Intestinal Fistulas. G. Kohlmann.—p. 45.
*Syphilitic Tumors. H. Neuberger.—p. 71.
*Differential Sign in Ileus. E. Gold.—p. 78.
*Cancer of the Testis. E. Gold.—p. 102.
*Embolic Parathyroiditis. H. Dieterich.—p. 114.
Capillary Microscopy in Surgical Lesions. B. Pfab and O. Hoche.—p. 123.
Pneumoperitoneum in Diagnosis. F. Raue.—p. 132.

Gastric and Intestinal Secretion After Removal of Gallbladder.—Rost's experiments on dogs failed to reveal any change after cholecystectomy in the chemical reaction of the gastric and pancreatic juice and bile or in ferment content.

Visceral Motor Reflexes in Diagnosis of Cancer.—Schlesinger urges others to study the pylorus-esophagus reflex to which he calls attention. It is a reflex spasm in the upper esophagus, which was the first sign of a cancer in the stomach in four cases and a very early sign in a fifth case. The spasmodic contraction interfered with swallowing, even of fluids. In one case it lasted for five weeks, and the gastric cancer was not discovered until six months later. In another case, the spasm in the upper esophagus dominated the clinical picture for the entire six months' course of the cancer, the earliest and a persisting symptom, but necropsy showed no anatomic changes in the esophagus. The spasm may be a defensive reflex, or a toxic phenomenon. It may occur physiologically in certain conditions, as after drinking ice water. It has nothing to do with what we call cardiospasm, but it has an analogon in the pylorus-small intestine tonic reflex which he has noted repeatedly in inoperable cases of cancer of the pylorus, a tetanic contraction of some segment of the bowel.

Vascular Disease of the Legs.—Kazda states that in 54 cases of gangrene of one leg, it involved the left leg in 31, and the left leg was most severely affected in 17 of 27 bilateral cases. This predilection of the left leg was explained by the extra use of this leg in the patients' occupations. Varices, on the other hand, are not the result of mechanical factors to begin with, but may be aggravated by them. In pregnant women, if varices develop, it is usually in the first months, before the uterus has enlarged enough to compress the blood vessels.

Gastro-Intestinal Fistulas.—Kohlmann presents evidence to prove that gastrojejunal and gastrocolic fistulas are becoming more common. They are traceable to a peptic jejunal ulcer, as a rule. In two of the four cases studied, there was cancer; ulcer in the others. In two, injury of the liver was manifest; in two others starvation edema was an early symptom. The roentgen ray is the main reliance in diagnosis, as also with covered perforation of the bowel, as he shows on the basis of two cases.

Syphilitic Pseudotumors.—Neuberger describes a case of tumor of the stomach, another of a tumor in the abdominal muscles, and one instance of a retrobulbar tumor, all of which subsided under treatment for syphilis. In the first two cases, the nature of the tumor was not suspected until the laparotomy. He warns physicians in the tropics to be particularly wary in regard to tumors for which unsuspected syphilis may be responsible.

Signs of Ileus.—Gold calls attention to the discovery of distended loops of small intestine in the small pelvis (Douglas) on palpation through the rectum. This finding indicates obstruction of the passage, probably at the ileocecal valve. It was pronounced in fourteen of sixteen cases of ileus from obstruction of the small intestine, but it was never found in four cases involving the large bowel. It is a sign that the obstruction is in the small and not the large intestine.

Cancer of the Testicle.—In two of the three cases described, the inoperable growth improved to such an extent under roentgen exposures that the sarcoma could be safely removed. In all three cases the focus of the malignant disease and the metastases proved very susceptible to the action of the rays. Not a trace of the tumor could be discovered months later, with or without operation.

Chronic Parathyroiditis.—Dieterich argues that embolic inflammatory processes in the parathyroids are probably more common than we realize in many infectious diseases.

Monatsschrift für Geb. und Gynäkologie, Berlin

67: 253-326 (Oct.) 1924

Dilatation of the Ureters in the Puerperium. H. Sellheim.—p. 253.
*Terminal Loss of Weight in Pregnancy. R. Hirsch.—p. 262.
Hegar's Sign of Pregnancy. R. Joachimovits.—p. 266.
Retention of Dead Fetus. M. Karlin.—p. 270.
Prolapse of Normally Situated Placenta. Larisch.—p. 278.
*Drug Treatment of Retention of Urine. F. Sieber.—p. 282.
Copper-Silver Solutions in Puerperal Fever. Scholten.—p. 285.
Seat of Placenta in Tubal Pregnancy. M. Beckman.—p. 293.
*Traumatic Vaginal Cysts. E. Stübler.—p. 298.
*Preliminary Radiotherapy for Uterine Cancer. A. Mayer.—p. 302.

Loss of Weight at the End of Pregnancy.—Hirsch's observations on 170 pregnant women showed an increase in weight until the sixth day before childbirth. A standstill occurs from the sixth to the fourth day, and then a decrease, which persists until delivery. The women lost on an average 0.4 kg. (0.88 lb.) in the five days. Hirsch assumes that the loss of weight may be attributed to the action of the pituitary body, which plays a part in the onset of delivery. One woman, who weighed 200 pounds, lost 16 pounds in eight days after irradiation of the pituitary.

Action of Hexamethylenamin on Retention of Urine.—Sieber states that in 32 cases out of 48, spontaneous urination occurred from four to twelve hours after a single prophylactic intravenous injection; in 9 cases, the next day, and after two

injections. The measure failed in 7 cases of Wertheim's operation, in which the bladder is usually injured. In 15 patients out of 17, good results were obtained from a postoperative injection, which in a few instances was repeated two or three times. The desired result was manifest in 85 per cent. of 65 cases. The dose is 5 c.c. of a 40 per cent. solution. Pregnancy is a contraindication, as hexamethylenamin seems to exert an action on the uterus. In 2 pregnant women, at the seventh and eighth months, the drug induced premature delivery.

Traumatic Vaginal Cysts.—While incising colporrhaphy scars in women during labor, Stübler has often noted cysts in the posterior wall of the vagina. The cysts were single or multiple, size from a pea to a nut, and superficially situated. Histologic examination and the anamnesis, lacerations of perineum, sutures, showed that the cysts were formed from and contained only pavement epithelium of the vagina. Stokes was the first to indicate the origin of these cysts. He compared them to Garré's traumatic epithelial cysts on the fingers.

Radiotherapy Preceding Operation in Carcinoma of Uterus.—Mayer suggests that irradiations should precede the operation in order to enhance the primary results from the operation, and prolong their duration. The interval should not be less than six weeks, or till the morbid discharge stops. Healing by first intention occurred in twenty-five out of twenty-eight cases treated by this method.

Münchener medizinische Wochenschrift, Munich

71: 1419-1454 (Oct. 10) 1924

Diabetes and Acidosis. Thannhauser and Tischhauser.—p. 1419. Cont'd.
*Endogenous Alcoholuria. E. Heilner.—p. 1422.
*Cholin and the Intestines. H. Spatz and E. Wiechmann.—p. 1425.
*Hydatid Cyst Fluid. O. Flössner and A. Keller.—p. 1427.
*Research on the Blood Sugar. E. Saenger and H. Mommsen.—p. 1427.
Bismuth in Congenital Syphilis. W. Stoye.—p. 1431.
*Hemorrhagic Treatment of Furuncles. F. Kuhn.—p. 1432.
*Explosion in Acetylene Anesthesia. K. Hurler.—p. 1432.
Isomers in Cocain Hypersensitiveness. O. Graf.—p. 1433.
Perforation of Eyelid by Bee's Sting. D. Vormann.—p. 1434.
Complications of Artificial Pneumothorax. K. H. Blümel.—p. 1435.
History of Medicine. H. G. Honigmann.—p. 1437.

Endogenous Alcoholuria.—Heilner found alcohol in the urine of twelve out of fifty insane patients, who had received no alcohol. The amounts ranged between 0.03 and 0.84 gm. per liter. It is probable that much more was excreted by the breath. He believes that there was a disturbance of alcohol oxidation, and points to the possibility of a connection between this endogenous alcoholuria and alcohol intolerance. Animals are unable to stand as much alcohol by the mouth, as by subcutaneous injections. Rabbits died after 4.5 c.c. alcohol by the mouth, while they bore 5 c.c. by subcutaneous injection with only slight intoxication.

Cholin and the Intestines.—Spatz and Wiechmann studied the intestinal movements after injections of cholin in healthy subjects. The action of the drug is irregular. No constant increase in the motility was noted, such as has been reported from observations on animals, and in postoperative atony.

Hydatid Cyst Fluid.—Flössner and Keller found no proteins in the fluid from about 170 echinococcus cysts from hog and beef livers. Creatinin was present in about one half of them. They confirm the presence of glucosamin in the walls of the hydatid cysts.

Research on the Blood Sugar.—Saenger and Mommsen investigated the action of preparations containing larger amounts of vitamins. The blood sugar was lowered a little in every form of application.

Hemorrhagic Treatment of Furuncles.—Kuhn uses suction strong enough to produce hemorrhages in and around the furuncle. If possible, he leaves the suction apparatus on for hours.

Explosion in Acetylene Anesthesia.—Hurler describes an explosion of the acetylene-oxygen mixture, which was caused by the use of a thermocautery during the laparotomy. He points out that the same danger is imminent, although usually forgotten, in ether anesthesia. The thermocautery or other possible sources of heat or sparks should not be used with either.

Wiener klinische Wochenschrift, Vienna

37: 1055-1080 (Oct. 9) 1924

*Inoculation Malaria. Barzilai-Vivaldi and O. Kauders.—p. 1055.
Postoperative Low Temperature. F. Starlinger.—p. 1057.
*Immunization with Tetanus Toxoids. R. Kraus.—p. 1059.
*Irradiation Injuries of Eyes. R. Bergmeister.—p. 1061.
*Bronchiectasia. R. Weinberger.—p. 1067.
*Treatment of Roentgen Teleangiectasia. A. Kriser.—p. 1068.
Action of Acratothermae. Schneyer.—p. 1069.
Dermatitis of Ear from Radio Receiver. H. Marcus.—p. 1069.
Numbering the Teeth. Rohrer.—p. 1069. Reply. Pirquet.—p. 1070.
Pathology and Surgery. J. Schnitzler. Supplement.—pp. 1-32.

Inoculation Malaria Not Transmissible by Anopheles.—The starting point of Barzilai-Vivaldi and Kauders' experiments was the observation that sexual forms of malaria parasites (gametes) were almost entirely absent from the blood of patients inoculated with malaria blood. They exposed febrile patients in this group to anopheles, and tried to transmit the disease to others by the bites of the mosquitoes. The results were negative, although subsequent injection of malaria blood demonstrated the susceptibility of the subjects. The authors conclude from their experiments that the malaria treatment of paralysis entails no danger of spreading malaria by this means.

Immunization with Tetanus Toxoids.—Kraus confirms the advantages of using a tetanus toxoid for the beginning of immunization of horses. It is, however, necessary to test it for the presence of the antigen. High concentrations of formaldehyd may destroy it. It is also essential to titrate the antitoxin content of the horse serum before changing to injections of active toxin.

Irradiation Injuries of Eyes.—Bergmeister reviews the injuries of the eye caused by ultra violet and roentgen rays. Protection of the eyes in radiotherapy—especially in lupus—is necessary.

Bronchiectasia.—Weinberger reports a remarkable improvement in the condition of a girl with bronchiectasia. An artificial pneumothorax made the situation worse. He attributes the successful outcome to Quincke's slanting position, used gradually for several hours daily.

Treatment of Roentgen Teleangiectasia.—Kriser recommends Wirz' method of cauterization of teleangiectasia occurring after roentgen treatment. The preliminary iontophoretic anesthesia keeps the patient quiet and shows only the pathologically changed blood vessels. The other vessels contract.

Zentralblatt für Chirurgie, Leipzig

51: 2183-2230 (Oct. 4) 1924

*Gastric Lymph Glands and Ulcer. E. Schneider.—p. 2184.
*Hemostasis in Stomach Resection. A. Rupp.—p. 2186.
*Technic of Operations on Bile Ducts. Tschassownikoff.—p. 2188.
*Value of Insulin for the Surgeon. G. Düttmann.—p. 2190.
Epithelium Pulp in Epithelium Grafting. Hilarowicz.—p. 2192.
"Integral Therapy of Infected Wounds." G. Wolfsohn.—p. 2194.
Chloroform Anesthesia in Splenectomy. Beresow and Nissnewitsch.—p. 2195.

Condition of Gastric Lymph Glands and Ulcer.—Schneider has found a swollen and inflamed condition of the superior and inferior gastric lymph glands an almost infallible sign of gastric ulcer. In five cases in which general indications over a period of years and, in most of the cases, gastric bleeding, pointed to ulcer and on operation no ulcer was found, Schneider has taken the inflamed condition of the gastric lymph glands as evidence of ulcer, and has resorted to resection. In every instance, he found several small ulcers, in addition to the expected gastritis. The inflamed glands are the expression of the accompanying gastritis, irrespective of whether the gastritis or the ulcer was primary. If, in connection with laparotomy for other purposes, the stomach is inspected, enlarged lymphatics will not be found, or, at the most, two or three along the greater curvature. But in ulcer they are always present, according to the degree of the accompanying gastritis, except with old healed ulcers.

Hemostasis in Stomach Resection.—Rupp recommends his method of hemostasis in stomach resections: After the stomach is loosened from its connections, he marks the site of the incision by a scratch on the serosa of the anterior and posterior wall, during which the stomach, separated at the pylorus, is thrown back. All the superficial blood vessels in

the serosa supplying the area to be resected are ligated. Then, first on the anterior and afterward on the posterior wall, the serosa and muscularis are carefully separated. In the submucosa, numerous vessels appear, which in the loose tissue are easily clamped off. After this the still intact mucous membrane covering is separated on the anterior and posterior wall and the clamps are replaced by very fine catgut. In this manner, the division is accomplished with little loss of blood and in a much shorter time. The remaining sutures can then be applied with a clear survey of the operative field.

Simplified Technic of Operations on the Bile Ducts.—Tschassownikoff draws the lower surface of the liver out, divides the round ligament, and gives this an upward pull; in addition he draws the margin of the liver upward with his hand. In most cases this is easily done, and makes the gallbladder and the biliary ducts readily accessible. He has employed this method with satisfaction in eighty-four cases. The patients never suffered from shock, as might be expected. To protect the abdominal cavity from infection on opening of or accidental injury to the gallbladder and gall ducts he sutures the transverse colon by its mesocolon to the anterior abdominal wall. He also places a small tampon in the foramen of Winslow, so that at most only part of the peritoneal cavity may become infected by the contents of the gallbladder and only local peritonitis can develop.

The Value of Insulin to the Surgeon.—Düttmann emphasizes that every operation on a diabetic is dangerous, not only because of the anesthesia but also on account of the slow healing of the wound. It is his routine practice, before operating on any person, to assure himself first whether the patient presents symptoms of diabetes, or at least whether there is any elimination of sugar through the urine. Every surgeon should endeavor to rid diabetic patients before operation of sugar and acetone, in order that the organism may be better able to resist complications, and by means of insulin, the patient's urine can be rid of acetone bodies and, in some instances, made sugar-free, in a relatively short time. Also postoperative coma can be prevented in almost every instance. Düttmann therefore concludes that insulin is a most valuable remedy for the surgeon, especially in combating untoward complications following operative intervention.

51: 2231-2294 (Oct. 11) 1924

*Roentgenization of Nasopharyngeal Fibromas. E. Schempp.—p. 2232.
Primary Suture in Compound Fracture of Patella. T. Naegeli.—p. 2235.
*Paralysis Following Anesthesia of Brachial Plexus. Raeschke.—p. 2236.
*Anesthesia and Incision in Kidney Operations. Pflaumer.—p. 2237.
Endoscopic Examination of Stomach and Duodenum. Heymann.—p. 2240.
Segmentation of Bones in Rachitic Curvatures. Springer.—p. 2242.

Roentgenization of Nasopharyngeal Fibromas.—Schempp reports that roentgen treatment brought about complete or approximately complete relief from symptoms in seven out of nine cases of basal-cell fibromas of the nasopharynx. These tumors yield to roentgen treatment as do few other neoplasms. He employed from 50 to 70 per cent. of the skin erythema dosage. Irradiation was usually applied from an anterior or from two lateral fields, with hard rays filtered through 0.5 mm. of zinc at a focal distance of from 30 to 40 cm. No injuries of a serious nature occurred.

Paralysis of the Arm Following Anesthesia of the Brachial Plexus.—Raeschke has employed plexus anesthesia (Kulenkampff) extensively and successfully in connection with operations on the upper arm. Recently, however, following an operation for tuberculosis of the tendon sheaths on the arm of a sturdy boy, aged 15, preparatory to which he had injected 20 c.c. of a 1.5 per cent. procain solution, the patient developed a serious paralysis of the arm which continued for three months. He no longer regards blocking this plexus as harmless. Its chief value is in cases in which general anesthesia is contraindicated, and other forms of anesthesia are not applicable.

Anesthesia and Incision in Kidney Operations.—Pflaumer states that he has performed thirty-seven successful kidney operations under local anesthesia. In kidney operations, respiration and expectoration are impaired much more than in other operations, owing to pressure on the costal arch, immobilization of the same, and manipulations of the diaphragm; all the more reason, therefore, why we should avoid the impairment of the respiratory organs that often results from inhalation anesthesia. In operations for stone it sometimes becomes necessary to take the patient to the roentgen room. If local anesthesia has been employed, this is a simple procedure, since the length of the operation need not be so carefully considered. Following kidney operations under general anesthesia, coughing and vomiting are particularly severe and injurious. Severe coughing tends to produce postoperative complications. After local anesthesia, micturition is normal immediately after the operation, partly, possibly, because the patient can be given fluids after the operation. Pflaumer recommends paravertebral conduction anesthesia. He injects from the ninth or eighth thoracic vertebra to the second lumbar vertebra 5 c.c. of a 1 per cent. and also 5 c.c. of a 0.5 per cent. solution of procain-epinephrin. He injects some of the 0.5 per cent solution also into the region of the incision. He does not hesitate to resort to rib resection if the position of the kidney requires it. Since adopting this principle he has had no fatalities and the course of healing has been excellent.

51: 2295-2342 (Oct. 18) 1924

Local Acidosis in Wounds Healing by First Intention. Girgolaff.—p. 2297.
*Muscular Atrophy After Resection of Sympathetic Nerve. Harttung.—p. 2300.
Operation for Hallux Valgus. A. Alsberg.—p. 2302.

Muscular Atrophy Following Resection of the Sympathetic Nerve in Asthma.—Harttung resorted to resection of the sympathetic nerve after the Kümmell method in treating a man, aged 37, for severe bronchial asthma. The patient had suffered for eleven years from asthmatic attacks, which were becoming more and more severe and prolonged, and had produced a highly nervous state and very evident deterioration of the patient's general health. All sorts of drugs and remedies had been tried but only heavy injections of epinephrin brought relief, and this was slow and was for only a brief period. The operation was well borne and no nerves were injured. The asthmatic attacks became milder and after two months ceased entirely. However, a few days after the operation, the patient observed a feeling of weakness in the left arm but no pain. After a time, the condition became worse and not only all the motions of the arm but also of the left shoulder required a certain amount of exertion. Later, distinct muscular atrophy developed in the shoulder and left arm; also in the adjoining thoracic muscles. No further unpleasant symptoms have been noted and, after several months, the muscular atrophy seems to be receding slowly.

Casopis lekaruv ceskych, Prague

63: 1477-1512 (Oct. 11) 1924

*Narcolepsy. A. Heveroch.—p. 1477.
*Viscosity and Refraction of Vitreous Body. A. Gala.—p. 1480.
Anatomy of Pathological Sex Manifestations. H. Bondy.—p. 1485. Cont'd.
*Volvulus of Sigmoid Colon. V. Novak.—p. 1489.
Treatment of Gastric and Duodenal Ulcer. V. Maydl.—p. 1496. Cont'd.
Treatment of Adnexitis. J. Jerie.—p. 1500. Conc'n.

Narcolepsy.—Heveroch's patient becomes quite sleepy every day at certain hours. He does not lose consciousness, but is unable to move. Laughing immediately produces a weakness of the lower extremities. The author localizes the disturbance in the grey matter of the third ventricle. Psychologically there is a faulty connection between the psychic personality and the static and motor functions.

Viscosity and Refraction of Vitreous Body.—Gala found a high viscosity in the vitreous body of patients with glaucoma. The refraction was not increased, but the sodium chlorid concentration was above normal. He regards the high viscosity as a phenomenon dependent on the hydration of the colloids. Addition of acid or alkali to the aspirated vitreous humor gave no results of value.

Volvulus of Sigmoid Colon.—The condition of two of Novak's patients did not allow resection of the sigmoid colon. He incised the scar tissue in the peritoneal surface of the mesentery which had caused the volvulus, and covered the raw area with peritoneum. The results were good. Local anesthesia is sufficient for the operation.